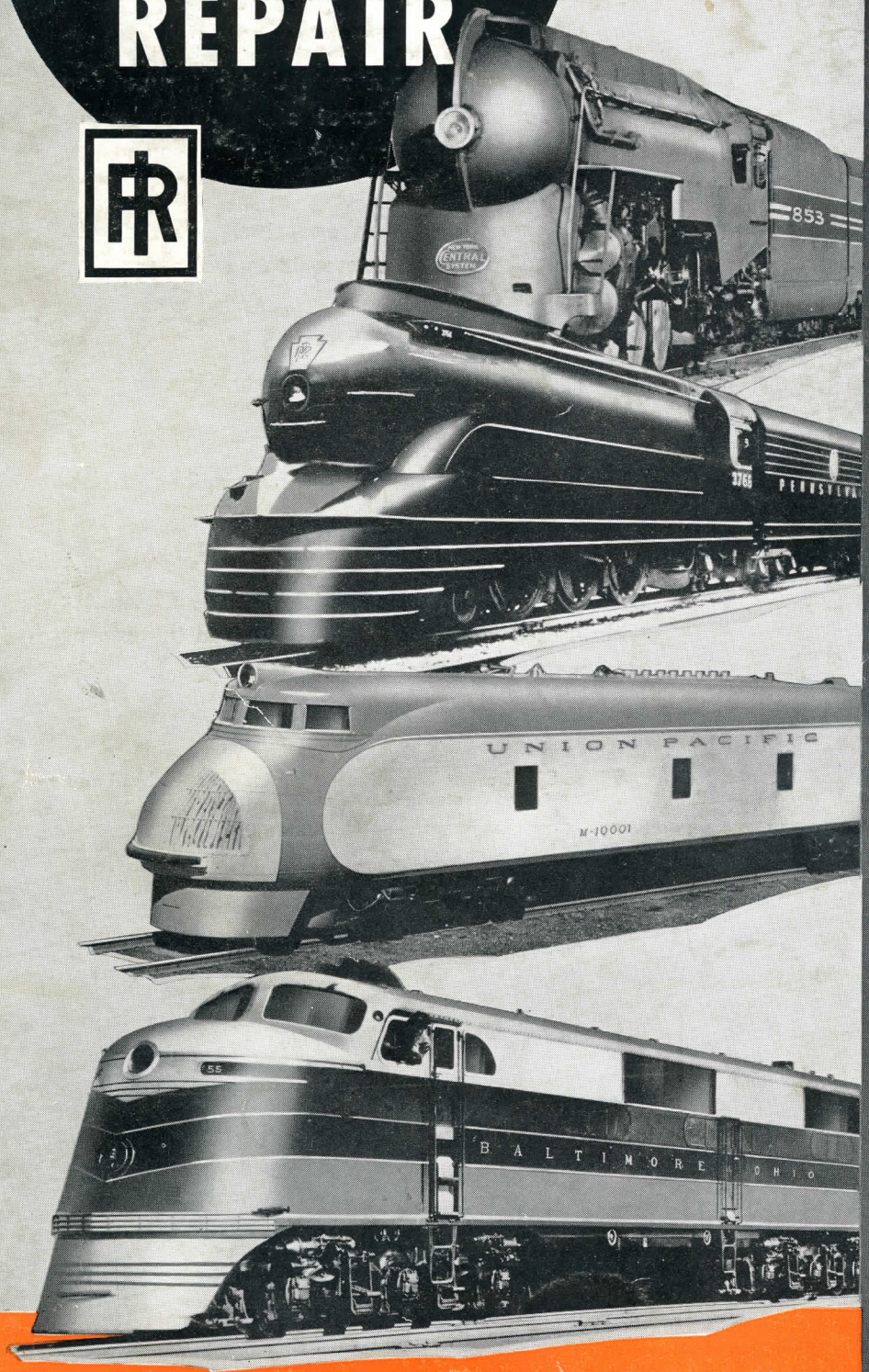
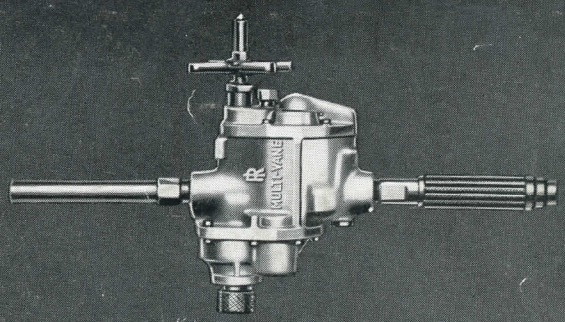
BUILD MAINTAIN REPAIR

with Modern

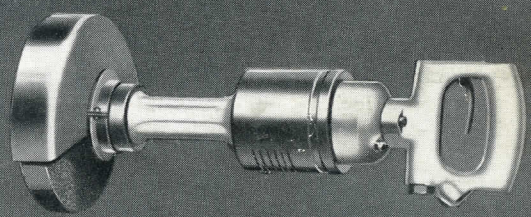
AIR TOOLS





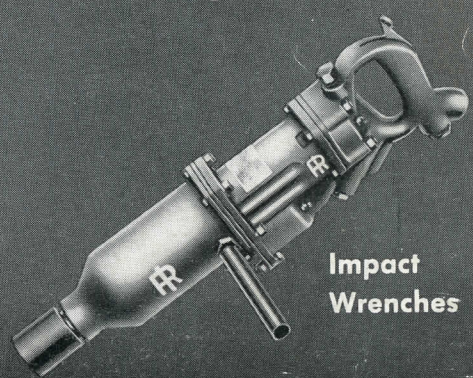
"Multi-Vane" Drills

Chipping Hammers



"Multi-Vane" Grinders

Riveting Hammers



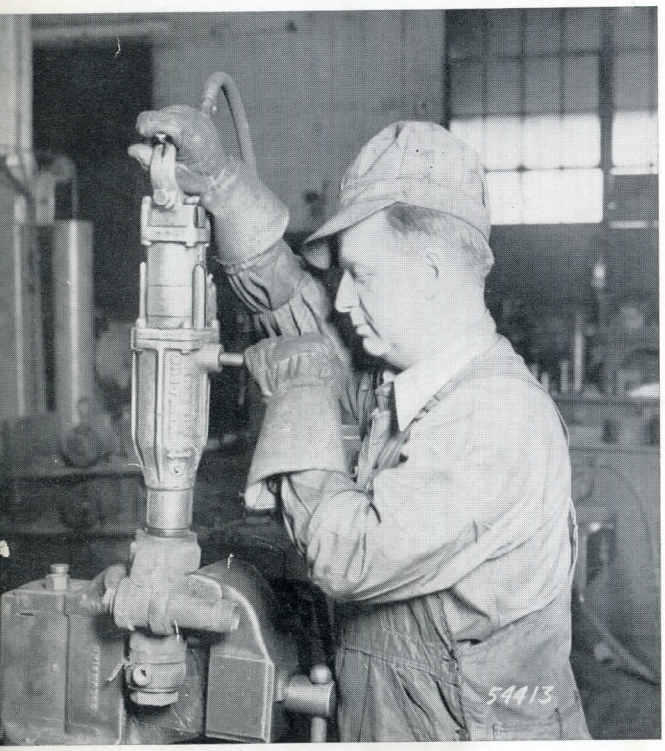
Impact Wrenches

Ingersoll-Rand

FORM 2341 A

Impact Wrenches

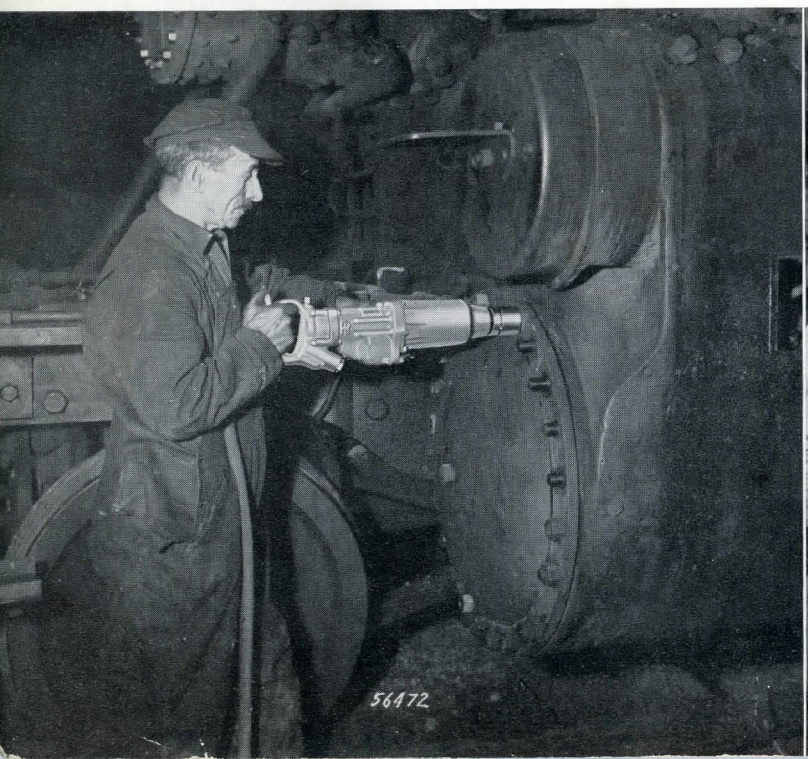
The Most Outstand



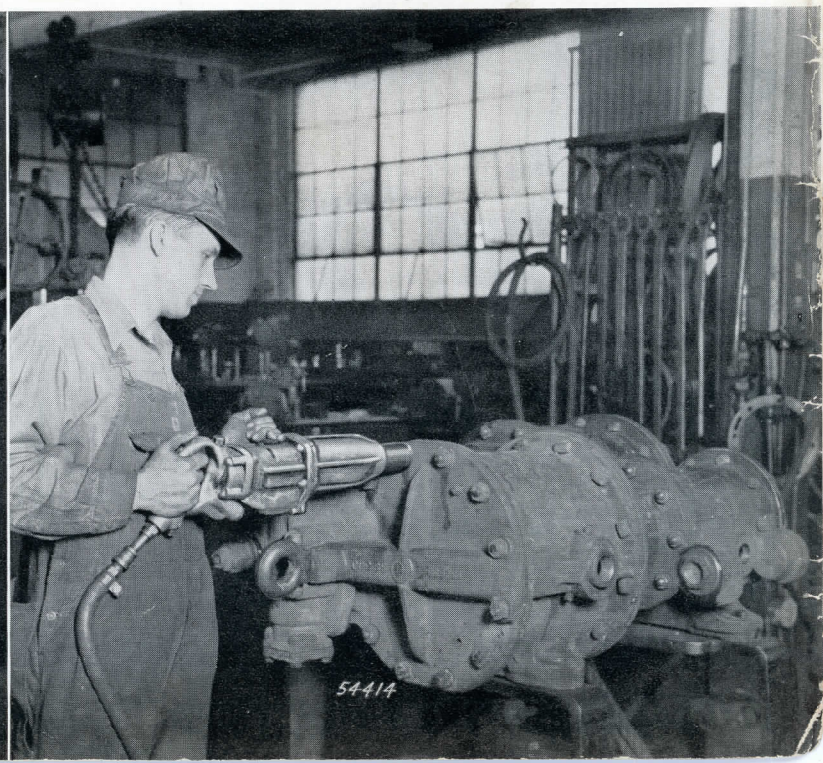
Above—A Size 533 Reversible Impact Wrench removing locking cup on a cylinder cock.

Below—Removing 1-inch cylinder head nuts with a Size 533 Impact Wrench.

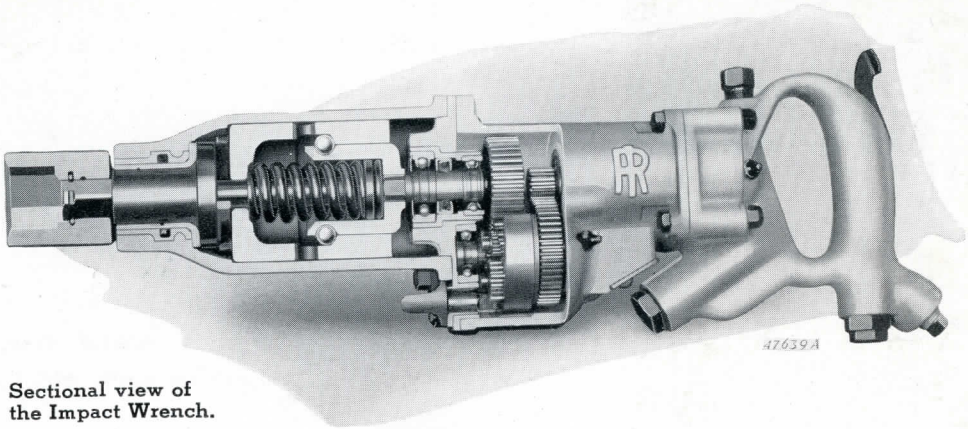
- Removes or tightens nuts, cap screws, etc. Faster and more effective than any other type of wrench.
- Air consumption only one-half of that of torque-type machines doing same work.
- Easily removes frozen nuts that a torque-type pneumatic wrench cannot start. No longer necessary to hammer nuts, etc., to loosen.
- Little torque reaction on operator. As easy to hold when starting frozen nuts as when running down loose ones.
- Can be used safely in any location (on scaffolds, cat walks, run ways, etc.).
- Much lighter than torque-type wrenches of similar capacities.
- Much less tiring to operate because of lighter weight and little torque reaction. No tugging or straining necessary.



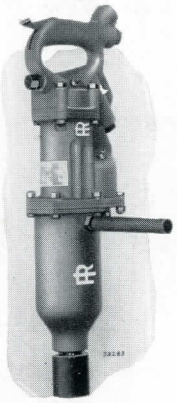
A Size 533 Impact Wrench used to assemble the head on the steam end of an Air Pump.



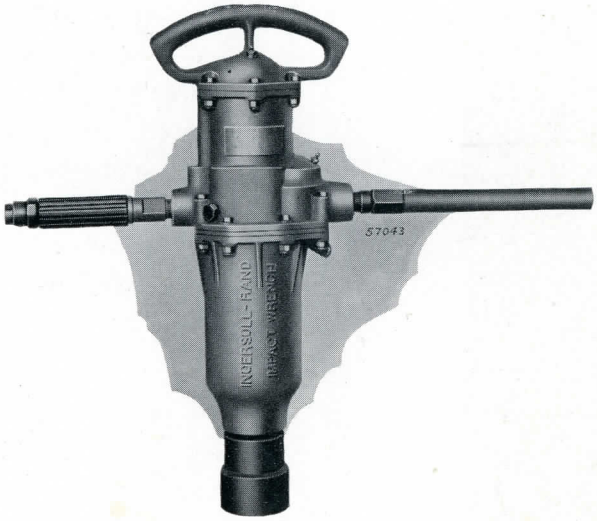
ing Locomotive Shop Tools



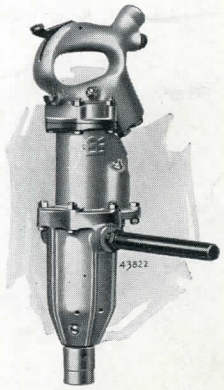
Sectional view of the Impact Wrench.



Sizes 503 and 533 Impact Wrenches.



Size 555 Impact Wrench.



Sizes 501 and 511 Impact Wrenches.

Only licensee of Pott Impact Wrench Patent No's. 2,012,916 and 2,049,273

Details of Ingersoll-Rand Impact Wrenches

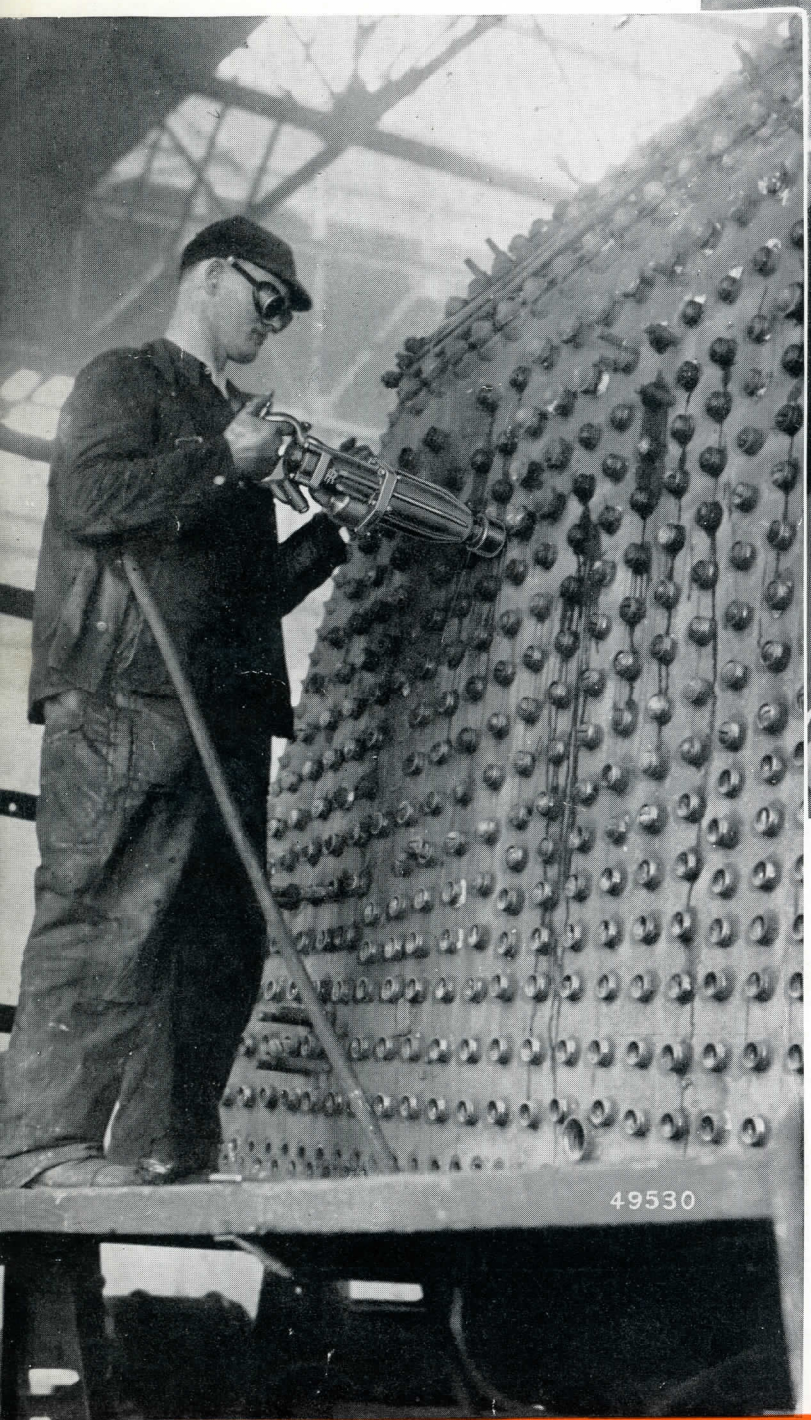
Size	Average Working Speed 90 lbs. Pressure, R. P. M.	Weight, Lbs.	Size Nut recommended for	Length Overall, Inches	Hose, Inches	Distance from Side to Center of Spindle, Inches
501	800 to 850 R. P. M.	13½	Applying up to ¾" bolts	16¼	½	1¾
511	1600 to 1700 Impacts per min.	14¼	Applying and removing up to ¾" bolts	16¼	½	1¾
503	625 to 650 R. P. M.	25¼	Applying ¾" to 1¼" bolts	20¼	¾	2⅛
533	1250 to 1300 Impacts per min.	26¾	Applying and removing up to 1¼" bolts	20¼	¾	2⅛
555	550 R. P. M. 1100 Impacts per min.	65	Applying and removing up to 1¾" bolts	24	¾	2⅞

Sizes 501 and 503 run clockwise for applying only. Sizes 511, 533 and 555 are reversible for both applying and removing.

Impact Wrenches

Save Time and

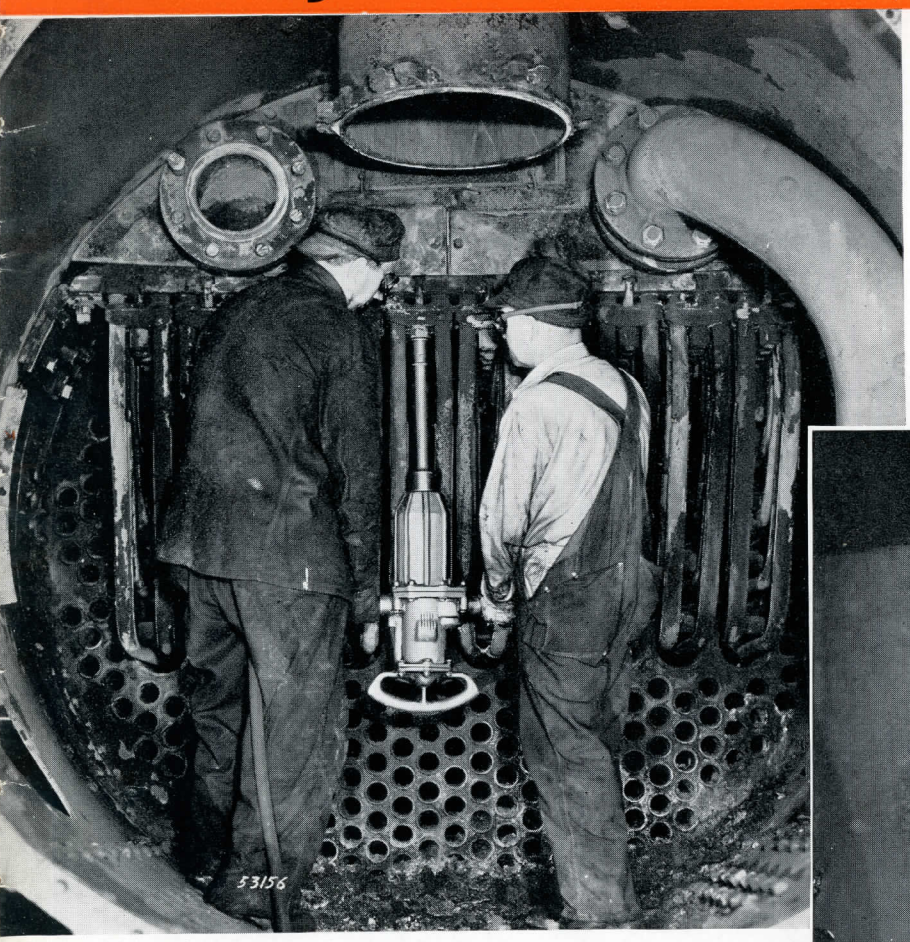
Above—The Size 555 Impact Wrench in use on binder bolt nuts. This wrench is recommended for applying and removing nuts and cap screws up to 1¾".



Left—Removing staybolt caps with a Size 533 Reversible Impact Wrench.

Dig 4-6070
~~Hy 3-3332~~

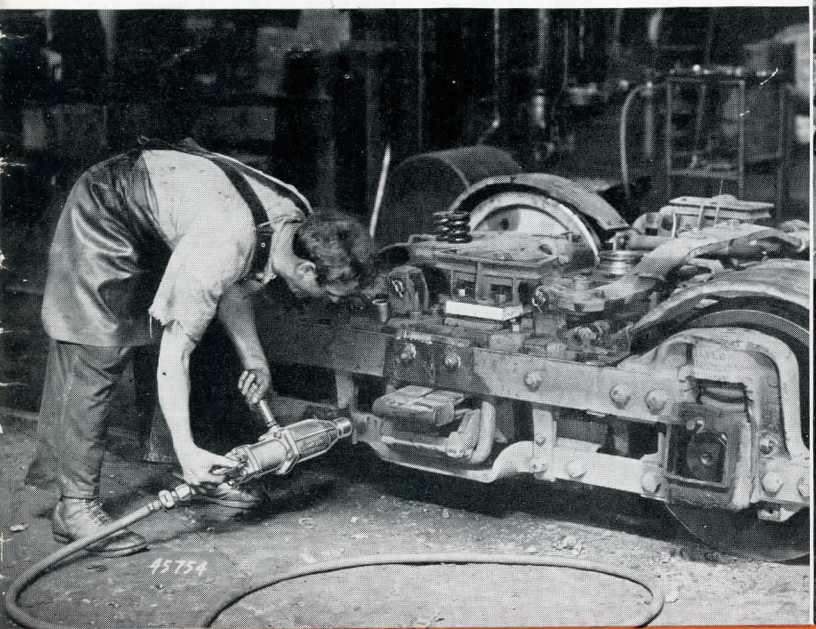
Money---Make Tough Jobs Easy



Above—The Size 555 Impact Wrench removing superheater unit nuts.

Below—A Size 533 Impact Wrench removing flexible staybolt caps from locomotive firebox.

Below—A Size 533 Reversible Impact Wrench tightening 3/4-inch and 7/8-inch journal box and side bar nuts on a car truck.



Ingersoll-Rand

Pneumatic Drills

(Lightweight "Multi-Vane")

Air Tools Are The Safest

- Four or more power vanes give smooth flow of power.
- One piece, hardened steel rotor is located to prevent thrust on end plates.
- Cylinders are of special alloy, hardened to resist wear, and honed to super-smooth finish to reduce wear on vanes.
- Vanes are extra wide to prevent cramping and to increase life.

Below—Opening up tell-tale holes in staybolts with a Size 00L "Multi-Vane" Drill.

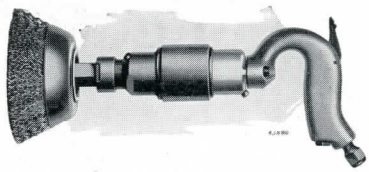
Above---Drilling tell-tale holes with Size 1L "Multi-Vane" Drill.

Size 00J Non-Reversible "Multi-Vane" Drill.

Size 0K "Multi-Vane" Drill with lever-type throttle.

Size 0K "Multi-Vane" Drill with pistol-grip handle.

Size 0L "Multi-Vane" Drill with angle attachment and straight handle. Screw driver attachments can also be furnished.



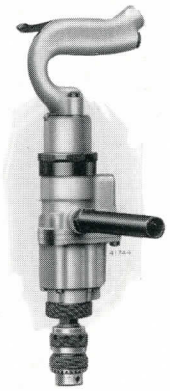
Size 1H Non-Reversible "Multi-Vane" Drill with wire brush.

Below—A Size 22K "Multi-Vane" Drill equipped with a screw-driver attachment running down screws after patching a baggage car roof.

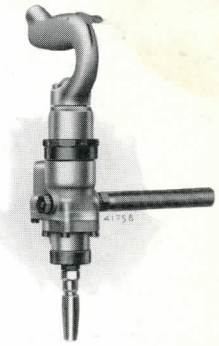
From Top to Bottom—Drilling with Size 00J, tapping with Size 1T and screw driving with Size 1HZ Lightweight "Multi-Vane" tools on the skirt shield of a streamlined passenger car.

and Lightest for Railroad Repair

- Poppet or piston-and-poppet type throttle valve eliminates air leakage and permits sensitive speed regulation.
- Exhaust noise reduced by exhaust deflector and muffler.
- Rotating parts supported by high grade ball bearings, reducing friction losses.
- Extensive use of strong aluminum alloys combines strength with light weight.

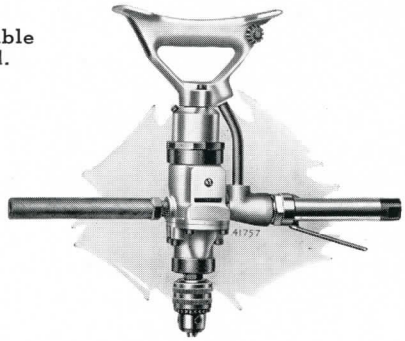


Size 1T "Multi-Vane" Tapping Machine.

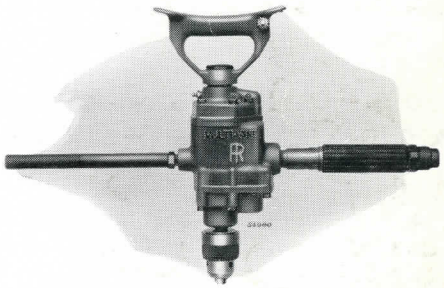


Size 1MZ "Multi - Vane" Screw Driver with dead handle.

Size 2H Non-Reversible "Multi-Vane" Drill.



Size 1M, 1N and 1P Non-Reversible "Multi-Vane" Drills. (With Breast-plate, Lever Throttle and Chuck).



Size 2XJ Non-Reversible "Multi-Vane" Drill.

Sizes 1H and 1L Non-Reversible" Multi-Vane" Drills.

NOTE:—Complete details on all Ingersoll-Rand Pneumatic Drills will be found on Pages 12 and 13.

Drilling No. 30 holes with a Size 00L "Multi-Vane" Drill in vestibule door post weather stripping.

Drilling the flange of a steel curtain guard on a passenger car with a Size 00L "Multi-Vane" Drill, and drilling steel window flashing on a window sill with a Size 1L "Multi-Vane" Drill.

Pneumatic Drills

(Large Sizes)

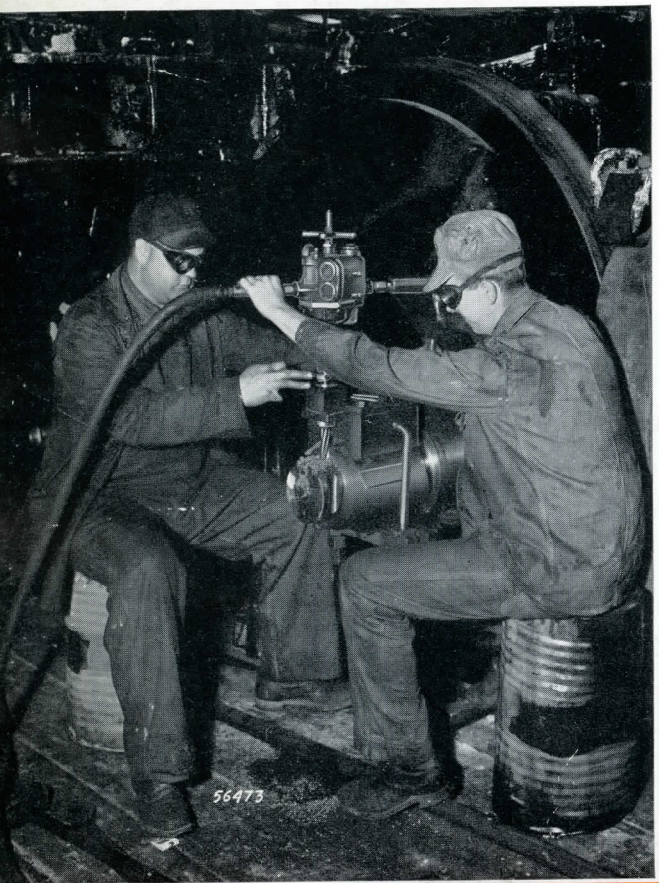
More Power per Pound

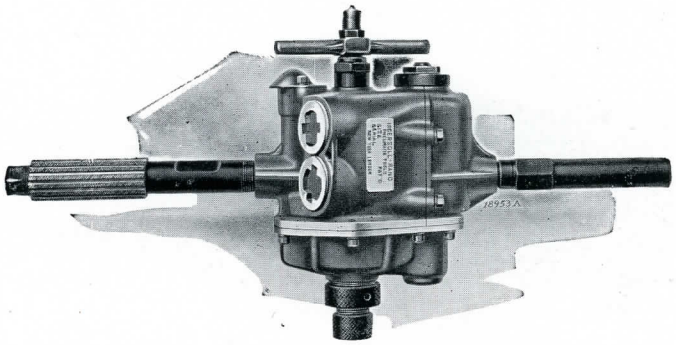
"Long-Stroke" Drills (Piston Type) with Centrifugal Governor Control

"Long-Stroke" Drills

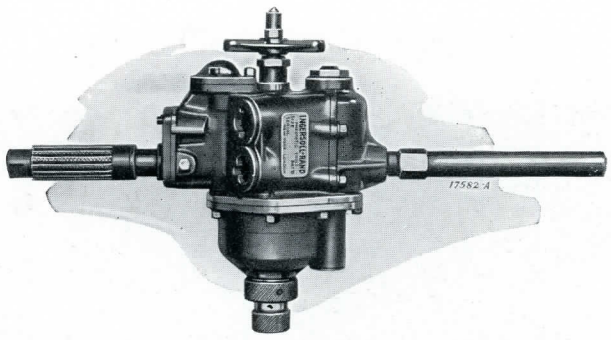
- Governor—Prevents racing; eliminates burning of twist drills, reamers and taps.
- Case Vent—through crank pin and crank to atmosphere—vents case, eliminates grease blow—lubricates and cools crank pin—centrifugal force throws grease into crank pin bearings.
- Crank—Built-up—eliminates toggles and heavy crank pin bearings—permits use of solid end connecting rods and renewable crank pin sleeves. No wear on the crank pins—counterweights materially reduce vibration—entire assembly can be removed or inserted without the aid of a tool.
- Connecting Rods—One-piece drop forgings—no straps, toggles, bolts, or pins to adjust in cramped quarters.
- Pistons—Special high-grade iron—can be renewed without necessitating renewal of the connecting rods.
- Cylinder Liners—Special steel—excellent wearing surface for cast iron pistons—renewable—threaded to take cylinder caps—no threads in case. A space between the liner and outer wall prevents the cylinder from being dented and pistons from sticking.
- Crank Pinion—Helical, stub teeth—stronger and smoother running than straight spur teeth—renewable without necessitating renewal of the crank—supported between ball bearings.
- Main Valve—One valve for all cylinders—large diameter with long bearing surfaces—air balanced and gear timed to turn at half the crank speed—minimizes wear in the bushing.

A Size CSB Non-Reversible "Long-Stroke" drill milling a 3/4-inch keyway for an eccentric crank arm.





Size B "Long-Stroke" Non-Reversible Drill.

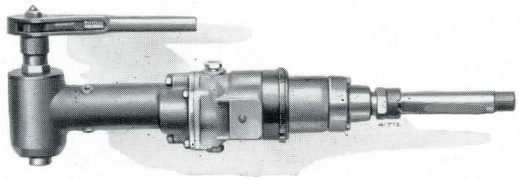


Size CCSC "Long-Stroke" Reversible Drill.

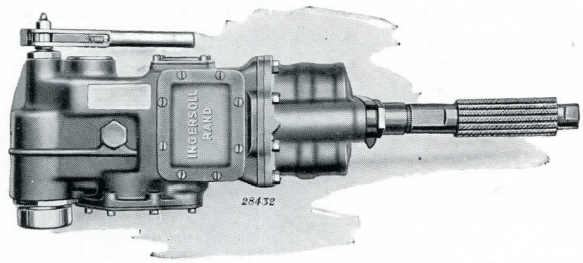
NOTE:--Complete details on all Ingersoll-Rand Pneumatic Drills will be found on pages 12 and 13.

. . . Easy Handling . . . Greater Flexibility

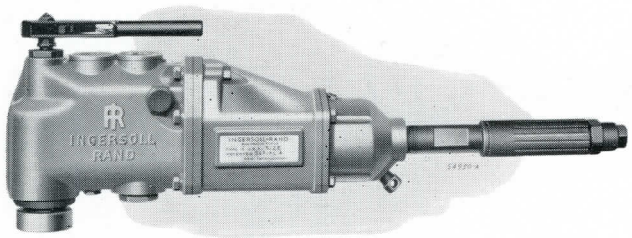
Close Quarter Drills ("Multi-Vane" and Piston Types)



Sizes 20H, 20J, 20K, 20L and 20M Non-Reversible "Multi-Vane" Close-Quarter Drills. (Shown with Lever Throttle).

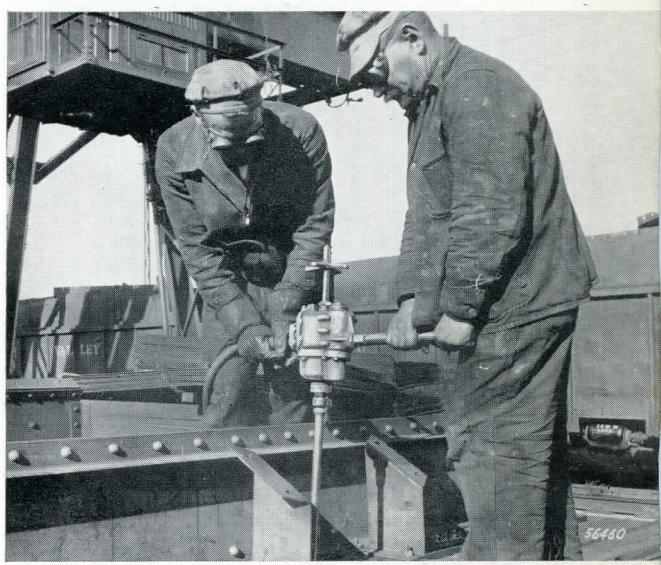


Size 90 Non-Reversible Close-Quarter Drill (Piston Type).



Size 40 Non-Reversible "Multi-Vane" Close-Quarter Drill.

Above—A Size 40 "Multi-Vane" Close-Quarter Drill reaming 1 11/32-inch frame and brace hole in locomotive frame.



Above—A Size CSB "Long-Stroke" drill reaming 5/8-inch holes on support bracket of a hopper car.

Reaming 1 7/32-inch holes in a locomotive cylinder flange with a Size 40 "Multi-Vane" Close Quarter Drill.

Below—A Size 40 "Multi-Vane" Close Quarter Drill reaming 1 1/4-inch holes in crosshead guides.

Pneumatic Drills

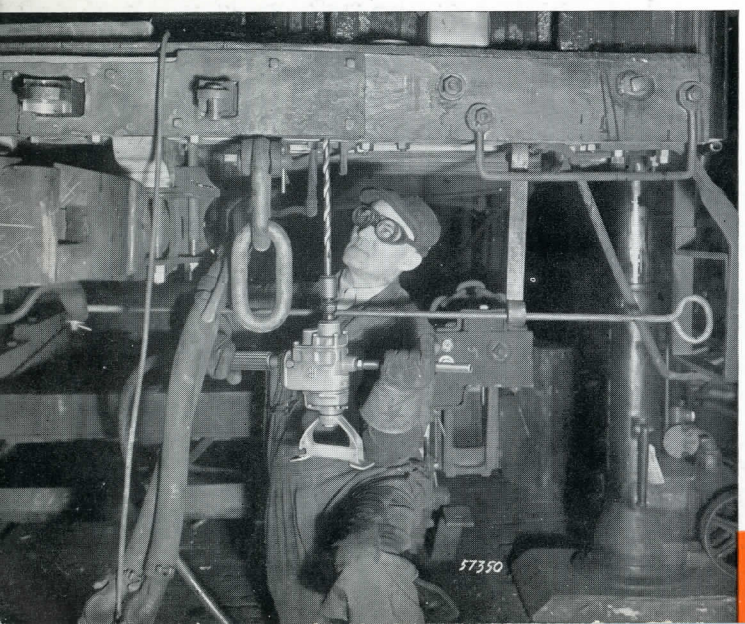
("Multi-Vane" - Large Sizes)

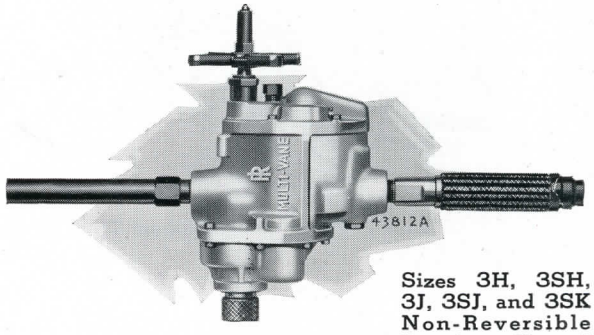
Use Air Tools

- Four or more power vanes give smooth flow of power.
- One-piece, hardened steel rotor is located to prevent thrust on end plates.
- Cylinders are of special alloy, hardened to resist wear, and honed to super-smooth finish to reduce wear on vanes.
- Vanes are extra wide to prevent cramping and to increase life.
- Sensitive governor maintains uniform speed within capacity of drill. Free speed only slightly higher than working speed. This conserves air and prevents burning of drills and reamers on light work.
- Rotor pinion removable. Permits replacement and also use of best possible material for both rotor and pinion.
- Automatic oiler continuously feeds metered amount of oil to motor. Oiler is adjustable.
- All rotating parts supported by anti-friction bearings. Rotor bearings are seal-plate type to exclude dirt and retain grease.

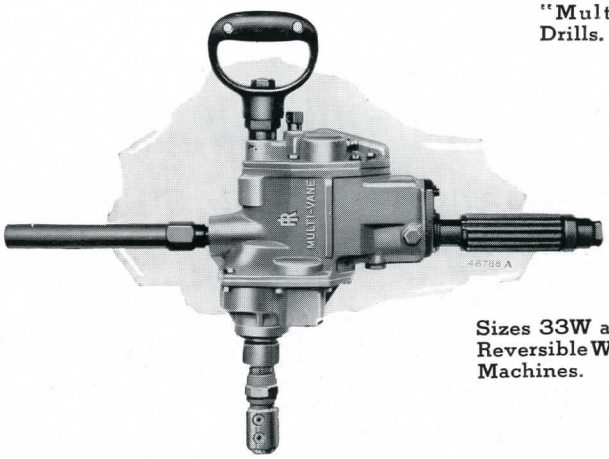
Above—A Size 55SM "Multi-Vane" Drill rolling 5½-inch superheater flues (direct) in the front end of a locomotive.

Below—A Size 22KW "Multi-Vane" Woodborer drilling 9/16-inch holes in wooden end sill of a passenger car.

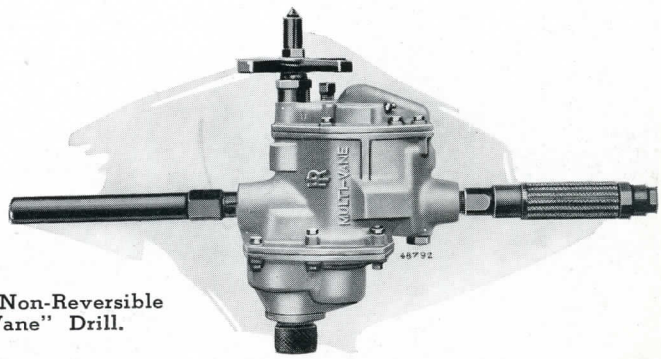




Sizes 3H, 3SH, 3J, 3SJ, and 3SK Non-Reversible "Multi - Vane" Drills.

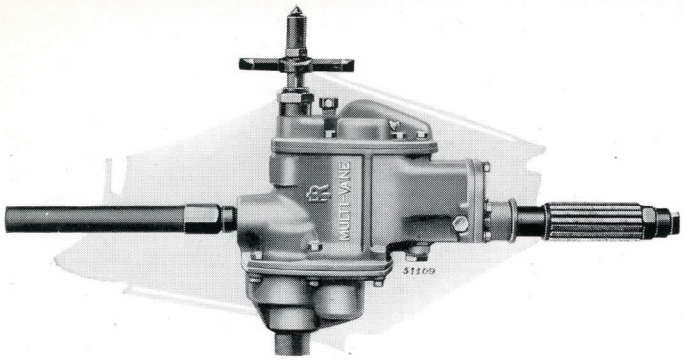


Sizes 33W and 33SKW Reversible Wood-Boring Machines.

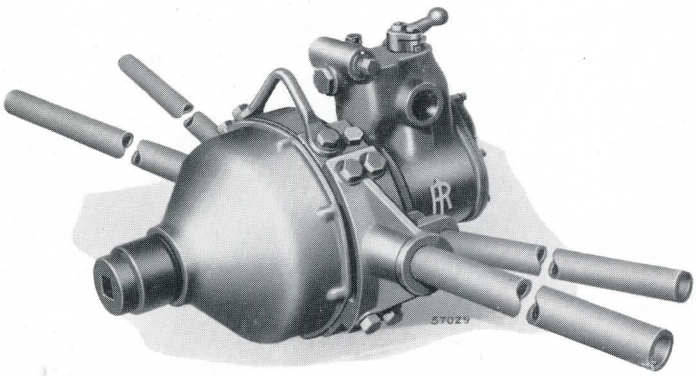


Size 4J Non-Reversible "Multi-Vane" Drill.

for "Safety-First"



Size 44J Reversible "Multi-Vane" Drill.



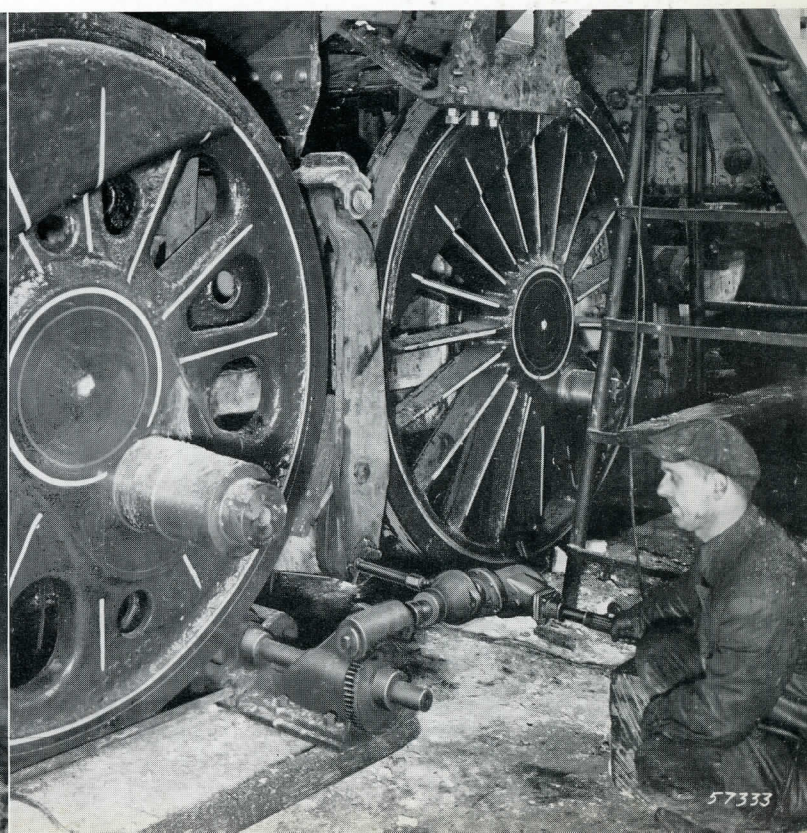
Size 55R Reversible "Multi-Vane" Flue Rolling Machine.

NOTE:—Complete details on all Ingersoll-Rand Pneumatic Drills will be found on pages 12 and 13.

Above—A Size 3SK "Multi-Vane" Drill reaming 1 1/16-inch holes in an end sheet patch of a freight car.

A Size 33SM Reversible "Multi-Vane" Drill running in radial staybolts in the outside wrapper sheet of a locomotive fire box.

Below—A Size 55SM Reversible "Multi-Vane" Drill operating a locomotive valve setting rig.



"MULTI-VANE" DRILLS, LIGHTWEIGHT DRILLS, ETC.

Size	Average Working Speed 90 lbs. Pressure, R.P.M.	Weight, Lbs.	Length of Feed, Inches	Reaming, Inches	Tapping, Inches	Flue Rolling, Inches	Standard Twist Drill will Drive, Inches	Size Thread on Spindle	Morse Taper Socket	Length Over-all Inches	Hose, Inches	Distance from Side to Center of Spindle, Inches
NON-REVERSIBLE												
00H	10 000	1½	...	For very light metal work			**9/32	3/8"-24	–	6½	5/16	13/16
00J	3800	1⅝	...				1/8	3/8"-24	–	7⅛	5/16	13/16
00K	1900	1⅝	...				5/16	3/8"-24	–	7⅛	5/16	13/16
00L	950	2	...				5/16	3/8"-24	–	8 1/16	5/16	13/16
0J	2250	2¼	...	For Light Drilling and Nut Setting			††	3/8"-24	–	8⅝	5/16	15/16
0K	1600	2¼	...					3/8"-24	–	8⅝	5/16	15/16
0L	925	2⅝	...					3/8"-24	–	9⅜	5/16	15/16
0N	425	2⅞	...					3/8"-24	–	9¾	5/16	15/16
1H	2100	5	...	..	..	...	¼	3/8"-24	1	13	½	1 3/32
1L	1500	5	...	..	..	...	5/16	3/8"-24	1	13	½	1 3/32
1M	1050	5¾	2½	5/16	..	...	5/16	½"-20	1 or 2	13 3/8	½	1 3/32
1N	725	6¼	2½	¼	..	...	3/8	½"-20	1 or 2	13 3/8	½	1 3/32
1P	475	6¼	2½	5/16	5/16	...	3/8	½"-20	1 or 2	13 3/8	½	1 3/32
2H	1275	11	2½	¼	..	...	3/8	.703"-16	1 or 2	15	½	1 7/16
2J	850	11	2½	3/8	3/8	...	5/16	.703"-16	1 or 2	16 3/16	½	1 7/16
2K	615	11	2½	7/16	7/16	...	5/16	.703"-16	1 or 2	17½	½	1 7/16
2L	425	10¼	2½	½	½	..	9/16	.703"-16	1 or 2	19	½	1 7/16
2M	300	10¼	2½	5/8	5/8	...	7/8	.703"-16	1 or 2	19	½	1 7/16
2XH	1275	13¼	2½	¼	..	...	3/8	.703"-16	1 or 2	15	½	1 7/16
2XJ	850	13¼	2½	3/8	3/8	...	9/16	.703"-16	1 or 2	15	½	1 7/16
2XK	615	13½	2½	7/16	7/16	...	9/16	.703"-16	1 or 2	16¼	½	1 7/16
2XL	425	12½	2½	½	½	...	9/16	.703"-16	1 or 2	17¼	½	1 7/16
2XM	300	12½	2½	5/8	5/8	...	7/8	.703"-16	1 or 2	17¼	½	1 7/16
3H	675	20	3⅞	¾	¾	...	29/32	....	2	13	¾	1 7/8
†M3H	675	25	3⅞	¾	¾	...	29/32	....	2	13	¾	1 7/8
3SH	675	20	3⅞	¾	¾	...	1	....	3	13⅛	¾	1 7/8
†M3SH	675	25	3⅞	¾	¾	...	1	....	3	13⅛	¾	1 7/8
3J	380	20	3⅞	13/16	13/16	...	29/32	....	2	13	¾	1 7/8
†M3J	380	25	3⅞	13/16	13/16	...	29/32	....	2	13	¾	1 7/8
3SJ	380	20	3⅞	13/16	13/16	...	1	....	3	13⅛	¾	1 7/8
†M3SJ	380	25	3⅞	13/16	13/16	...	1	....	3	13⅛	¾	1 7/8
3J4	380	22 3/4	3⅞	13/16	13/16	...	1	....	4	14⅛	¾	1 7/8
†M3J4	380	26½	3⅞	13/16	13/16	...	1	....	4	14⅛	¾	1 7/8
3SK	260	20	3⅞	1	x1⅛	...	1¼	....	3	13⅛	¾	1 7/8
†M3SK	260	25	3⅞	1	x1⅛	...	1¼	....	3	13⅛	¾	1 7/8
3K4	260	22 3/4	3⅞	1	x1⅛	...	1¼	....	4	14⅛	¾	1 7/8
†M3K4	260	26½	3⅞	1	x1⅛	...	1¼	....	4	14⅛	¾	1 7/8
3SM	155	25¼	3⅞	1¼	x1⅝	...	1¼	....	3	15 15/16	¾	1 15/16
†M3SM	155	30¼	3⅞	1¼	x1⅝	...	1¼	....	3	15 15/16	¾	1 15/16
3M4	155	25⅝	3⅞	1¼	x1⅝	...	1¼	....	4	16⅞	¾	1 15/16
†M3M4	155	30¼	3⅞	1¼	x1⅝	...	1¼	....	4	16⅞	¾	1 15/16
4J	380	34¼	4¼	1	1	...	1¼	....	3	14½	¾	2 5/16
†M4J	380	39½	4¼	1	1	...	1¼	....	3	14½	¾	2 5/16
4SJ	380	34¼	4¼	1	1	...	1¼	....	4	15⅛	¾	2 5/16
†M4SJ	380	39½	4¼	1	1	..	1¼	....	4	15⅛	¾	2 5/16
4K*	260	34¼	4¼	1	x1⅛	...	1¼	....	3	14½	¾	2 5/16
†M4K*	260	39½	4¼	1	x1⅛	...	1¼	....	3	14½	¾	2 5/16
4SK	260	34¼	4¼	1	x1⅛	...	1¼	....	4	15⅛	¾	2 5/16
†M4SK	260	39½	4¼	1	x1⅛	...	1¼	....	4	15⅛	¾	2 5/16
4L*	190	34¼	4¼	1¼	x1⅝	...	1¼	....	3	14½	¾	2 5/16
†M4L*	190	39½	4¼	1¼	x1⅝	...	1¼	....	3	14½	¾	2 5/16
4SL	190	34¼	4¼	1¼	x1⅝	...	1¼	....	4	15⅛	¾	2 5/16
†M4SL	190	39½	4¼	1¼	x1⅝	...	1¼	....	4	15⅛	¾	2 5/16
4SM	135	42	4¼	2	2	...	2	....	4	18¼	¾	2 5/16
†M4SM	135	47¼	4¼	2	2	...	2	....	4	18¼	¾	2 5/16
5J	380	47 3/4	5	1½	1½	...	2	....	4	16 11/16	1	2 9/16
†M5J	380	56	5	1½	1½	...	2	....	4	16 11/16	1	2 9/16
5K	260	47¾	5	2	2	...	2	....	4	16 11/16	1	2 9/16
†M5K	260	56	5	2	2	...	2	....	4	16 11/16	1	2 9/16
5L	170	47¾	5	2½	2½	...	2½	....	4	16 11/16	1	2 9/16
†M5L	170	56	5	2½	2½	...	2½	....	4	16 11/16	1	2 9/16
5SM	100	65½	5	2½	2½	...	3	....	5	21 7/8	1	2 15/16
†M5SM	100	73¾	5	2½	2½	...	3	....	5	21 7/8	1	2 15/16
REVERSIBLE												
22J	850	15	2½	3/8	3/8	...	9/16	....	1 or 2	16 3/8	½	1 7/16
22K	615	15¼	2½	7/16	7/16	...	9/16	....	1 or 2	17 3/8	½	1 7/16
22L	425	14¼	2½	½	½	...	9/16	....	1 or 2	18 3/8	½	1 7/16
22M	300	14¼	2½	5/8	5/8	...	7/8	....	1 or 2	18 3/8	½	1 7/16
33J	380	22 3/4	3⅞	13/16	13/16	1½	29/32	....	2	13	¾	1 7/8
†M33J	380	29¾	3⅞	13/16	13/16	1½	29/32	....	2	13	¾	1 7/8
33SJ	380	22 3/4	3⅞	13/16	13/16	1½	1	....	3	13⅛	¾	1 7/8
†M33SJ	380	29¾	3⅞	13/16	13/16	1½	1	....	3	13⅛	¾	1 7/8
33J4	380	25 1/2	3⅞	13/16	13/16	1½	1	....	4	14⅛	¾	1 7/8
†M33J4	380	31¼	3⅞	13/16	13/16	1½	1	....	4	14⅛	¾	1 7/8
33SK	260	22 3/4	3⅞	1	x1⅛	2¼	1¼	....	3	13⅛	¾	1 7/8
†M33SK	260	29¾	3⅞	1	x1⅛	2¼	1¼	....	3	13⅛	¾	1 7/8
33K4	260	25 1/2	3⅞	1	x1⅛	2¼	1¼	....	4	14⅛	¾	1 7/8
†M33K4	260	31¼	3⅞	1	x1⅛	2¼	1¼	....	4	14⅛	¾	1 7/8
33SM	155	28	3⅞	1¼	x1⅝	2½	1¼	....	3	15 15/16	¾	1 15/16
†M33SM	155	33	3⅞	1¼	x1⅝	2½	1¼	....	3	15 15/16	¾	1 15/16
33M4	155	28	3⅞	1¼	x1⅝	2½	1¼	....	4	16⅞	¾	1 15/16
†M33M4	155	33	3⅞	1¼	x1⅝	2½	1¼	....	4	16⅞	¾	1 15/16
44J	380	36	4¼	1	1	2½	1¼	....	3	14½	¾	2 5/16
†M44J	380	42¼	4¼	1	1	2½	1¼	....	3	14½	¾	2 5/16
44SJ	380	36	4¼	1	1	2½	1¼	....	4	15⅛	¾	2 5/16
†M44SJ	380	42¼	4¼	1	1	2½	1¼	....	4	15⅛	¾	2 5/16
44K*	260	36	4¼	1	x1⅛	2½	1¼	....	3	14½	¾	2 5/16
†M44K*	260	42¼	4¼	1	x1⅛	2½	1¼	....	3	14½	¾	2 5/16
44SK	260	36	4¼	1	x1⅛	2½	1¼	....	4	15⅛	¾	2 5/16
†M44SK	260	42½	4¼	1	x1⅛	2½	1¼	....	4	15⅛	¾	2 5/16
44L*	190	36	4¼	1¼	x1⅝	2½	1¼	....	3	14½	¾	2 5/16
†M44L*	190	42¼	4¼	1¼	x1⅝	2½	1¼	....	3	14½	¾	2 5/16
44SL	190	36	4¼	1¼	x1⅝	2½	1¼	....	4	15⅛	¾	2 5/16
†M44SL	190	42¼	4¼	1¼	x1⅝	2½	1¼	....	4	15⅛	¾	2 5/16
44SM	135	43¾	4¼	2	2	5½	2	....	4	18¼	¾	2 5/16
†M44SM	135	50	4¼	2	2	5½	2	....	4	18¼	¾	2 5/16
55J	380	50¼	5	1½	1½	3½	2	....	4	16 11/16	1	2 9/16
†M55J	380	60	5	1½	1½	3½	2	....	4	16 11/16	1	2 9/16
55K	260	50¼	5	2	2	3½	2	....	4	16 11/16	1	2 9/16
†M55K	260	60	5	2	2	3½	2	....	4	16 11/16	1	2 9/16
55L*	170	50¼	5	2½	2½	4	2½	....	4	16 11/16	1	2 9/16
†M55L*	170	60	5	2½	2½	4	2½	....	4	16 11/16	1	2 9/16
55SM	100	68	5	2½	2½	5	3	....	5	21 7/8	1	2 15/16
†M55SM	100	77½	5	2½	2½	5	3	....	5	21 7/8	1	2 15/16
55Q	32	195	..	Extra Heavy Drilling, Reaming, Tapping and Flue Rolling.				....	..	18¾	1	5 3/8
55R	32	195	..					....	..	18¾	1	5 3/8

Lightweight "Multi-Vane" Drills

(For automobile, airplane, refrigerator, radio, and other light sheet metal work.)

"Multi-Vane" Drills

x Stay Bolt Tapping; †Malleable Case Drills. *Use-Em-Up Spindle recommended for these drills.

††For work where high torque but light weight is required. Definite rating not given because of wide variation in applications.

**Drill rating for aluminum (all other ratings for drilling in steel)

To avoid the burning of twist drills the tool speed should be regulated to conform to the size twist drill used.

eapest Part of a Job

4-Cylinder "Long-Stroke" Drills--

The only piston-type drills with centrifugal speed governor.

FOUR CYLINDER "LONG STROKE" DRILLS (Non-Reversible)

Size	Average Working Speed 90 lbs. Pressure, R. P. M.	Weight, Lbs.	Length of Feed, Inches	Reaming, Inches	Tapping, Inches	Flue Rolling, Inches	Standard Twist Drill will Drive, Inches	Length Over-all, Inches	Morse Taper Socket	Hose, Inches	Distance from Side to Center of Spindle, Inches
A	200	57	5	2	2	...	2	16 3/8	4	3/4	3 15/16
AC	174	65	5	2 1/2	2 1/2	...	2 1/2	17 1/4	4	3/4	3 15/16
ASE	84	71	5	Extra Heavy Drilling, Reaming and Tapping				19	5	3/4	3 15/16
B	360	41	4 1/4	1	1	...	1 1/4	14 1/2	3	3/4	3 3/8
BS	360	42	4 1/4	1	1	...	1 1/4	15 3/8	4	3/4	3 3/8
BSC	249	48	4 1/4	1 1/4	1 1/4	...	1 1/2	16 1/2	4	3/4	3 3/8
BSE	112	48	4 1/4	2	2	...	2	16 1/2	4	3/4	3 3/8
C	595	28	3 7/8	3/4	3/4	...	29/32	13 3/8	2	3/4	2 15/16
CS	595	28	3 7/8	3/4	3/4	...	1	13 5/8	3	3/4	2 15/16
CSA	450	28	3 7/8	15/16	7/8	...	1	13 5/8	3	3/4	2 15/16
CSB	247	30	3 7/8	1	†1 1/8	...	1 1/4	14 5/8	3	3/4	2 15/16
CSC	150	30	3 7/8	1 1/4	†1 5/8	...	1 1/4	14 5/8	3	3/4	2 15/16

†Staybolt tapping.

FOUR-CYLINDER "LONG STROKE" DRILLS (Reversible)

Size	Average Working Speed 90 lbs. Pressure, R. P. M.	Weight, Lbs.	Length of Feed, Inches	Reaming, Inches	Tapping, Inches	Flue Rolling, Inches	Standard Twist Drill will Drive, Inches	Length Over-all, Inches	Morse Taper Socket	Hose, Inches	Distance from Side to Center of Spindle, Inches
AA	200	66	5	2	2	3 1/2	2	16 3/8	4	3/4	3 15/16
AAC	174	74	5	2 1/2	2 1/2	4	2 1/2	17 1/4	4	3/4	3 15/16
AASE	84	80	5					19	5	3/4	3 15/16
AASH	30	172	...	Extra Heavy Drilling, Reaming, Tapping and Flue Rolling				24 3/4	.	3/4	5 1/4
AASK	20	172	...					24 3/4	.	3/4	5 1/4
BB	360	44	4 1/4	1	1	2 1/2	1 1/4	14 1/2	3	3/4	3 3/8
BBS	360	45	4 1/4	1	1	2 1/2	1 1/4	15 3/8	4	3/4	3 3/8
BBSC	249	50	4 1/4	1 1/4	1 1/4	3	1 1/2	16 1/2	4	3/4	3 3/8
BBSE	112	50	4 1/4	2	2	5 1/2	2	16 1/2	4	3/4	3 3/8
CC	595	29	3 7/8	3/4	3/4	...	29/32	13 3/8	2	3/4	2 15/16
xCCL	595	23	3 7/8	3/4	3/4	...	29/32	13 3/8	2	3/4	2 15/16
CCS	595	30	3 7/8	3/4	3/4	...	1	13 5/8	3	3/4	2 15/16
xCCSL	595	23	3 7/8	3/4	3/4	...	1	13 5/8	3	3/4	2 15/16
CCSA	450	30	3 7/8	15/16	7/8	1 1/2	1	13 5/8	3	3/4	2 15/16
xCCSAL	450	23 1/2	3 7/8	15/16	7/8	1 1/2	1	13 5/8	3	3/4	2 15/16
CCSB	247	33	3 7/8	1	†1 1/8	2 1/4	1 1/4	14 5/8	3	3/4	2 15/16
xCCSBL	247	26	3 7/8	1	†1 1/8	2 1/4	1 1/4	14 5/8	3	3/4	2 15/16
CCSC	150	33	3 7/8	1 1/4	†1 5/8	...	1 1/4	14 5/8	3	3/4	2 15/16
xCCSCL	150	26 1/2	3 7/8	1 1/4	†1 5/8	...	1 1/4	14 5/8	3	3/4	2 15/16

x Lightweight Drills. †Staybolt tapping.

3-Cylinder Piston Drills

Size	Average Working Speed 90 lbs. Pressure, R. P. M.	Weight, Lbs.	Length of Feed, Inches	Reaming, Inches	Tapping, Inches	Flue Rolling, Inches	Standard Twist Drill will Drive, Inches	Length Over-all, Inches	Morse Taper Socket	Hose, Inches	Distance from Side to Center of Spindle, Inches
6	1650	10	...	...	...	...	5/16	13 7/8	1 or 2	1/2	1 1/2
600	1650	11	2 1/2	...	...	...	5/16	15	1 or 2	1/2	1 1/2

Close-Quarter Drills--Reversible, Non-Reversible

"Multi-Vane" Type (Non-Reversible)

Size	Average Working Speed 90 lbs. Pressure, R. P. M.	Weight, Lbs.	Length of Feed, Inches	Reaming, Inches	Tapping, Inches	Flue Rolling, Inches	Standard Twist Drill will Drive, Inches	Length Over-all, Inches	Morse Taper Socket	Hose, Inches	Distance from Side to Center of Spindle, Inches
20H	800	14 1/4	1 3/4	3/8	3/8	...	3/16	6 7/8	2	1/2	1 3/16
20J	530	14 1/4	1 3/4	7/16	7/16	...	3/16	6 7/8	2	1/2	1 3/16
20K	385	14 1/4	1 3/4	1/2	1/2	...	5/8	6 7/8	2	1/2	1 3/16
20L	265	14 1/4	1 3/4	5/8	5/8	...	7/8	6 7/8	2	1/2	1 3/16
20M	190	14 1/4	1 3/4	7/8	7/8	...	29/32	6 7/8	2	1/2	1 3/16
40	150	45	2 1/2	2	2	...	2	9 7/16	4	3/4	1 3/16

"Multi-Vane" Type (Reversible)

Size	Average Working Speed 90 lbs. Pressure, R. P. M.	Weight, Lbs.	Length of Feed, Inches	Reaming, Inches	Tapping, Inches	Flue Rolling, Inches	Standard Twist Drill will Drive, Inches	Length Over-all, Inches	Morse Taper Socket	Hose, Inches	Distance from Side to Center of Spindle, Inches
R44	150	48	2 1/2	2	2	....	2	9 7/16	4	3/4	1 3/16

Piston-Type (Non-Reversible)

Size	Average Working Speed 90 lbs. Pressure, R. P. M.	Weight, Lbs.	Length of Feed, Inches	Reaming, Inches	Tapping, Inches	Flue Rolling, Inches	Standard Twist Drill will Drive, Inches	Length Over-all, Inches	Morse Taper Socket	Hose, Inches	Distance from Side to Center of Spindle, Inches
80	175	35	2 1/2	1 1/4	1 1/4	...	1 1/4	8 3/4	3	3/4	1 5/16
90	140	41	2 1/2	2	2	...	2	9 1/4	4	3/4	1 9/16
90SE	60	50	4 1/4	Extra Heavy Work				12 1/8	5	3/4	2 3/8

Piston-Type (Reversible)

Size	Average Working Speed 90 lbs. Pressure, R. P. M.	Weight, Lbs.	Length of Feed, Inches	Reaming, Inches	Tapping, Inches	Flue Rolling, Inches	Standard Twist Drill will Drive, Inches	Length Over-all, Inches	Morse Taper Socket	Hose, Inches	Distance from Side to Center of Spindle, Inches
99	140	43	2 1/2	2	2	...	2	9 1/4	4	3/4	1 9/16
99SE	60	52	4 1/4	Extra Heavy Work				12 1/8	5	3/4	2 3/8

Wood Borers

PISTON TYPE

Size	Average Working Speed 90 lbs. Pressure, R. P. M.	Weight, Lbs.	Length of Feed, Inches	Reaming, Inches	Tapping, Inches	Flue Rolling, Inches	Standard Twist Drill will Drive, Inches	Length Over-all, Inches	Morse Taper Socket	Hose, Inches	Distance from Side to Center of Spindle, Inches
†BBW	360	45	...	...	...	...	x4	18	3	3/4	3 3/8
†CCW	730	26	...	...	...	...	x2	17 1/8	2	3/4	2 15/16

"MULTI-VANE" TYPE

Size	Average Working Speed 90 lbs. Pressure, R. P. M.	Weight, Lbs.	Length of Feed, Inches	Reaming, Inches	Tapping, Inches	Flue Rolling, Inches	Standard Twist Drill will Drive, Inches	Length Over-all, Inches	Morse Taper Socket	Hose, Inches	Distance from Side to Center of Spindle, Inches
22JW	850	14 1/4	...	...	...	...	x1	17 1/4	1 or 2	1/2	1 7/16
22KW	615	14 1/4	...	...	...	...	x1	17 1/4	1 or 2	1/2	1 7/16
33W	675	25 3/4	3 7/8	...	...	...	x2	16 3/4	2	3/4	1 7/8
33SKW	260	25 3/4	3 7/8	...	...	...	x4	16 3/4	3	3/4	1 7/8

†Four cylinder type. x Diam. Wood Bit will drive, inches

"Multi-Vane" Screw Drivers and Nut Setters

PUSH THROTTLE "MULTI-VANE" SCREW DRIVERS AND NUT SETTERS

Size	Average Working Speed 90 lbs. Pressure, R.P.M.	Weight, Lbs.	Work adapted for	Size Thread on Spindle		Length Overall, Inches	Hose, Inches	Distance from Side to Center of Spindle, Inches
†HZ	2100	4 1/4	Will drive No. 10 Screws	3/8"-24	..	14	1/2	1 5/32
†LZ	1500	4 1/4	Will drive No. 14 Screws	3/8"-24	..	14	1/2	1 5/32
†MZ	1050	5 1/2	**Will drive No. 16 or 1/4" Screws	1/2"-20	..	13 7/8	1/2	1 13/32
†NZ	725	5 1/2	**Will drive No. 18 or 1/4" Screws	1/2"-20	..	13 7/8	1/2	1 13/32
†PZ	475	5 1/2	**Will drive No. 20 or 5/16" Screws	1/2"-20	..	13 7/8	1/2	1 13/32

**Capacity in wood depends on length of screw, density of wood, size of prebored hole, etc.; in metal on tightness desired. Slowest machine (1PZ) is usually most satisfactory for wood screws.

TAPPING MACHINE

Size	Average Working Speed 90 lbs. Pressure, R.P.M.	Weight, Lbs.	Work adapted for	Size Thread on Spindle		Length Overall, Inches	Hose, Inches	Distance from Side to Center of Spindle, Inches
†T	††375	7 1/4	1/4" tapping in steel 3/8" tapping in aluminum or cast iron	1/2"-20	..	15 3/8	1/2	1 13/32

††Speed is 800 R.P.M. when backing out of tapped hole.

Pneumatic Wrenches

ANGLE WRENCHES

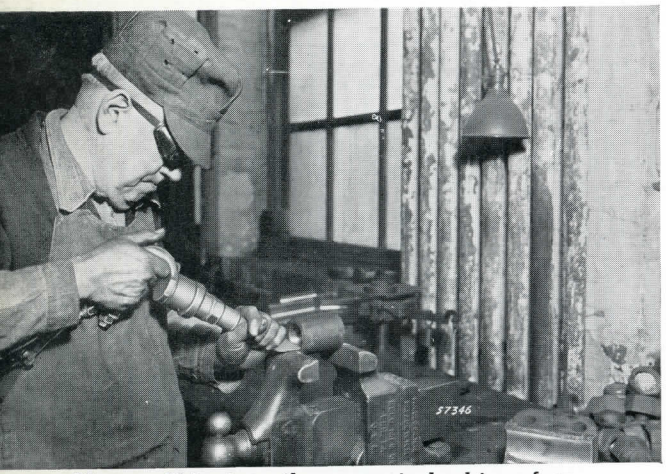
Size	Average Working Speed 90 lbs. Pressure, R. P. M.	Weight, Lbs.	Nut Running Suited for	Length Over-all, Inches	Hose Inches	Distance from Side to Center of Spindle, Inches
DEA	75	36	Upto 1 1/4" Bolts	4 13/16	1/2	2 1/4
28H	800	13 1/2	" " 3/8 "	3 11/16	1/2	1 3/16
28J	530	13 1/2	" " 7/16 "	3 11/16	1/2	1 3/16
28K	385	13 1/2	" " 1/2 "	3 11/16	1/2	1 3/16
28L	265	13 1/2	" " 5/8 "	3 11/16	1/2	1 3/16
28M	190	13 1/2	" " 3/4 "	3 11/16	1/2	1 3/16
58	110	54	" " 1 1/2" "	5 15/16	3/4	2 9/16

TRACK WRENCHES

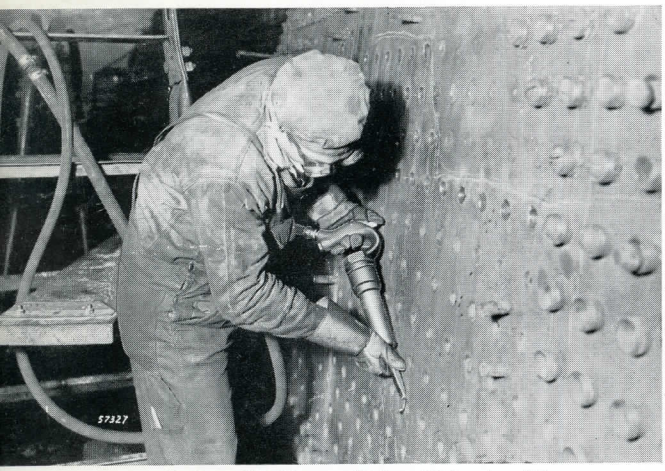
Size	Average Working Speed 90 lbs. Pressure, R. P. M.	Weight, Lbs.	Nut Running Suited for	Length Over-all, Inches	Hose Inches	Distance from Side to Center of Spindle, Inches
99	140	46	Light R. R. Track Bolting	12	3/4	1 9/16
99E	60	61	Heavy R. R. Track Bolting	10 5/8	3/4	2 3/8

Hammers

Chipping, Calking and Scaling

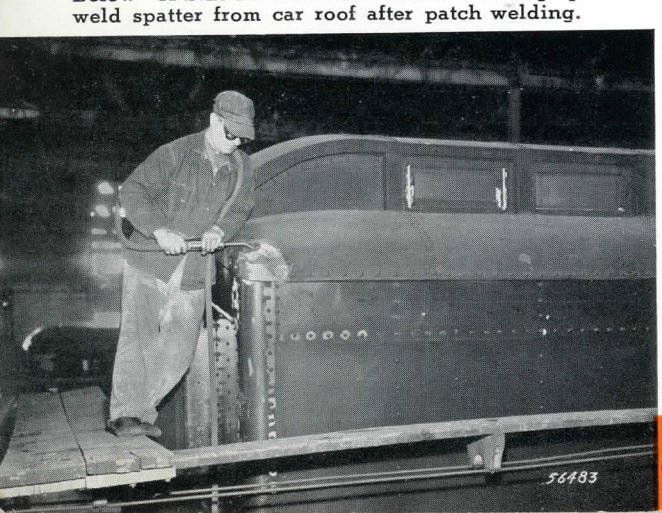


Above—Chipping oil grooves in bushings for a locomotive valve gear with a Size K1 Flapper-Valve chipper.



Above—A Size C3 Sleeve-Valve Chipping Hammer cutting burrs out of staybolt holes in the wrapper sheet of a fire box before retapping.

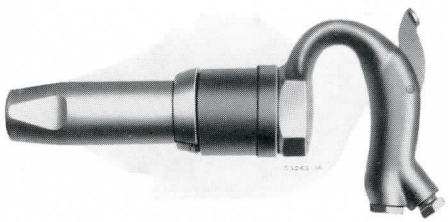
Below—A Size 18 Weld Flux Scaler cleaning up weld spatter from car roof after patch welding.



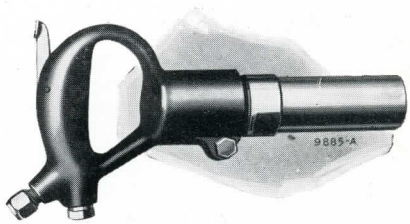
Many Sizes and Ty

"Flapper-Valve" Chippers

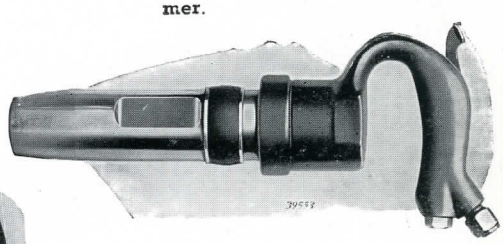
- A handle locking arrangement holds handle tight on barrel.
- The handle is a drop forging of great strength.
- The throttle valve is of the combination piston and poppet type that eliminates air leakage and gives exact control.
- The "flapper-type" valve is self seating and practically indestructible. Valve seat improves with use.
- The exhaust deflector is flush with barrel. Exhaust can be turned in direction desired.
- The walls of the barrel are amply thick to prevent damage under the most severe service.



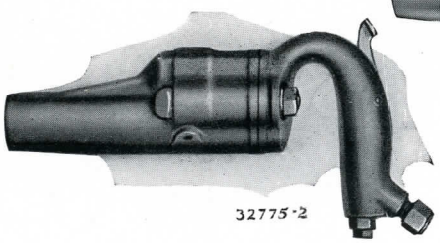
Size C3 Sleeve-Valve Chipping and Calking Hammer.



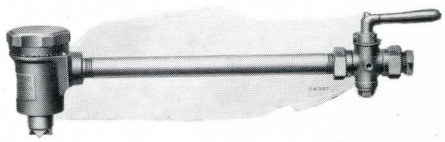
Size N1 Valveless Scaling and Chipping Hammer.



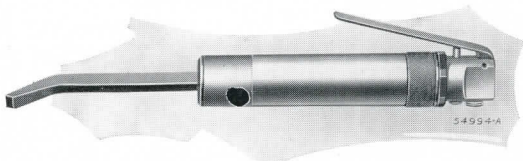
Size 300 Flapper-Valve Chipping Hammer.



Size 2R Offset-Valve Chipping Hammer.



Size 16 Scaling Tool.



18 Weld Flux Scaler with Lever-Type Throttle.
(Also available with push-type throttle)

pes for All-Around Shop Service

A Size C3 Chipping Hammer calking rivets on a boiler patch.

A Size C3 Hammer chipping corrugated deck plate on the front end of a new streamliner.

Table of Sizes

Size	Piston Stroke, Inches	Length Over-all, Inches	Weight, Lbs.	Size Hose Recommended, Inches	Work adapted for
			"FLAPPER-VALVE" HAMMERS		
000	3/4	10 1/2	11 1/2	1/2	Light aluminum castings, light cast iron
100	1	11 1/4	12	1/2	Heavy aluminum castings, medium cast iron
200	2	13 7/16	13 1/2	1/2	Heavy cast iron, medium steel castings, high carbon billets
300	3	14 9/16	14 3/4	1/2	Heavy steel castings, low carbon and alloy steel billets
400	4	15 13/16	15 1/4	1/2	Extra-heavy chipping
			"SLEEVE-VALVE" HAMMERS		
C1	1	11 1/4	10 1/2	1/2	Light chipping and calking
C2	1 1/2	11 3/4	10 3/4	1/2	Chipping and medium calking
C3	2	12 1/4	11	1/2	Chipping and heavy calking
			"OFFSET-VALVE" HAMMERS		
1R	1	11	12	1/2	Light chipping, calking, flue beading
2R	2	12	12 1/2	1/2	Medium chipping, calking, flue beading
3R	3	13	13 1/2	1/2	General chipping work
4R	4	14	14 1/2	1/2	Heavy chipping work
5R	4	14	14	1/2	Extra heavy chipping
			SCALING AND CHIPPING HAMMERS		
			"FLAPPER-VALVE" HAMMERS		
*K1	1	8 5/8	5 3/8	1/2	Light chipping, calking and scaling on light casting and sheet metal, die, aeroplane and similar light work
K2L	1 3/4	10	6	1/2	
18	1 1/16	9 3/4	4	1/2	Removing flux and splatter after welding, scraping paint, etc.
			VALVELESS HAMMER		
N1	1 1/4	10 1/2	8	1/2	Light scaling, calking, chipping

*K1 chipper has nozzle to take Navy standard scaler chisels having shanks 1/2" diam. and 1 3/4" long. (Either hex. or round).

NOTE:—Practically the only difference between the 4R and the 5R is in the nozzle. The 4R takes a Navy standard chisel, and the 5R a larger shank chisel.

SCALING TOOLS

Size	Cylinder Bore, Inches	Piston Stroke, Inches	Diam. Working Face, Ins.	Operating Length Over-all, Ins.	Weight, Lbs.	Hose Recommended, Inches	Scaling Work suitable for
16 Short	1 3/16	3/4	7/8	4 1/8	2 1/2	1/2	Flat surfaces and around rivet heads up to 1 inch
16 Long	1 3/16	3/4	5/8	5 3/8	2 3/4	1/2	Flat surfaces and around rivets larger than 1 inch

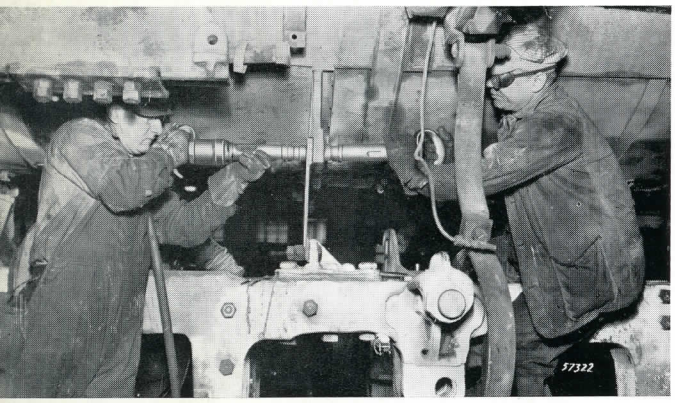
Chipping Hammers

Calking mud ring seam with a Size C2 Sleeve-Valve Chipping Hammer.

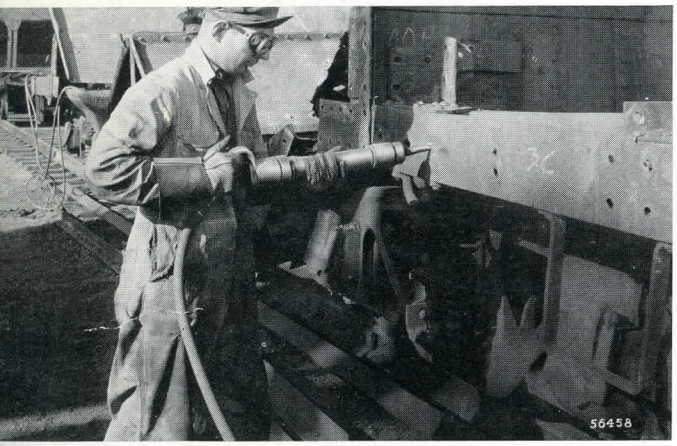
Riveting Hammers

Driving 1⅛" button head rivets on a hip patch to the barrel of a locomotive boiler with a Size 9A Riveting Hammer.

Riveting Hammers



Above—Riveting a waist sheet to a boiler T-Iron and frame casting with a Size 6A Riveter.



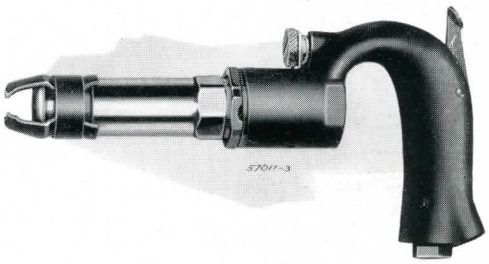
Above—Backing out side sill rivets on hopper cars with a Size 9000 Rivet Buster.

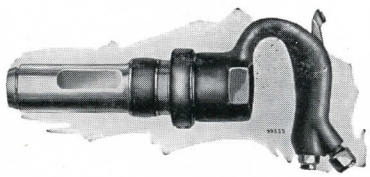
Below—Riveting end sill channel to side sill on steel underframe of freight car with a Size 6A Riveter.

A Complete Line for

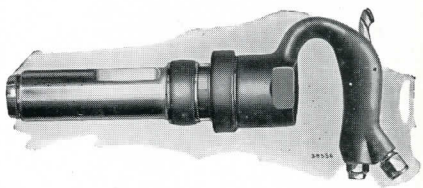
- The handle is made from a drop forging. It is strong and durable, and of a shape that fits the hand.
- The valve box forms a positive cushion for the piston on its return stroke.
- The valve box is sturdily built; hardened for long life and ground for close clearances.
- The valve has ample bearing surface and is without holes or ports from which cracks or breaks ordinarily start.
- The barrel is heat-treated, hardened, and ground.
- An automatic spring-locking device constantly exerts pressure on the tightened handle to keep it from shaking loose.
- The throttle valve is of the Ingersoll-Rand combination piston and poppet type that is long wearing and leak proof, and that gives a very finely graduated control of the hammer blows.

Size AV-3 Short-Stroke Lightweight Riveting Hammer with pistol-grip handle. These Lightweight Hammers are designed for driving small aluminum, dural, or soft iron rivets.

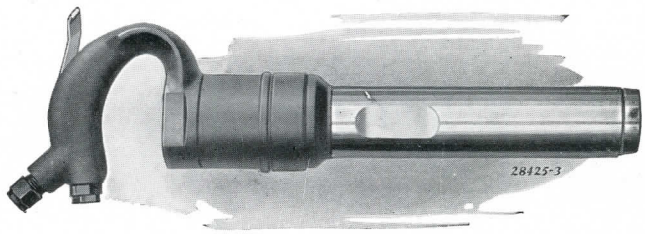




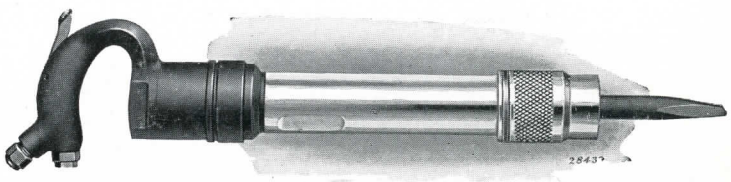
Size 200R Riveter.



Size 300R Riveter.

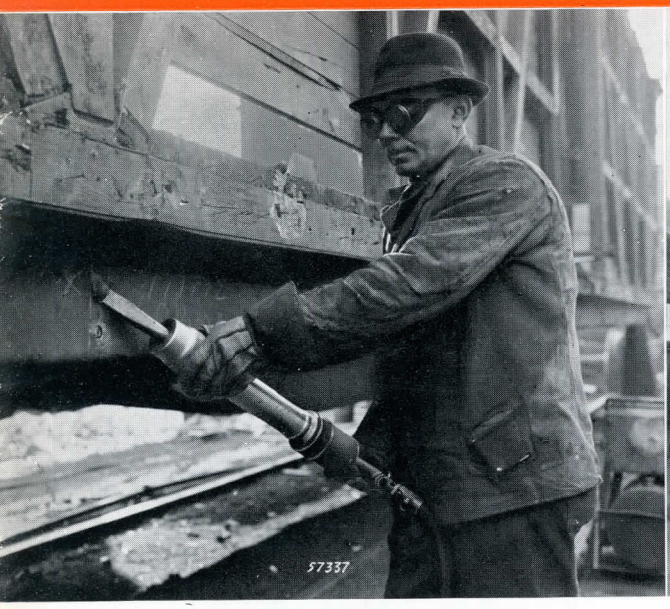


Size 4A Riveter.



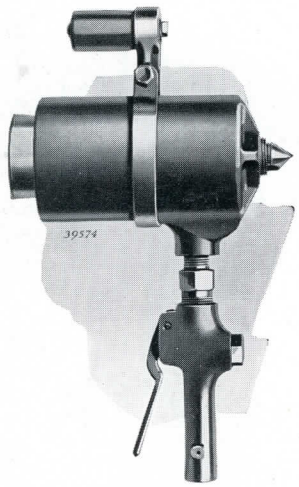
Size 9000 Rivet Buster. For cutting or busting the heads off rivets up to 3/4 inch diameter.

Every Building or Repair Job



Cutting off 5/8-inch side sill rivets on a freight car with a Size 9000 Rivet Buster.

Size 6A Riveting Hammer driving 5/8-inch rivets on side plates of hopper cars.



Size "00" Jam Riveter. Has short overall length, for rivets up to 7/8 inch diameter.

Inverted Type Handle.

Inside Trigger Handle

TABLE OF SIZES

Size No.	Piston Stroke, Inches	Piston Diam. Inches	Length Exclusive of Set, Inches	Length Standard Piston, Inches	Weight (Without Set), Lbs.	Size of Hose Recommended, Inches	Rivet Set Shanks	Size Rivets will Drive
RIVETING HAMMERS								
200R	2	1 3/8	13 1/2	2 3/4	12 3/4	1/2	.9345" dia. by 2 1/2" long	Drives up to 3/8" hot rivets
300R	3	1 3/8	14 9/16	2 3/4	13 1/4	1/2		Drives up to 1/2" hot rivets
*4A	4	1 1/16	15	2	15 1/2	1/2		Drives up to 5/8" hot rivets
*5A	5	1 1/16	16	2 1/2	18	1/2	1.2165" dia. by 2 3/4 ins. long	Drives up to 3/4" hot rivets
†5A	5	1 1/16	12 3/4	2 1/2	18	1/2		Drives up to 3/4" hot rivets
*6A	6	1 1/16	17	2 1/2	18 3/4	1/2		Drives up to 7/8" hot rivets
*8A	8	1 1/16	19	3	21 1/2	1/2		Drives up to 1 1/8" hot rivets
*9A	9	1 1/16	21	4	25	1/2		Drives up to 1 1/4" hot rivets

*With Open Type Outside Trigger Handle. †With Inverted Type Handle.

RIVET BUSTER

9000	9	1 1/16	22 1/2	4	*24 3/4	1/2		Cutting off Rivets up to 3/4" diameter

*Weight with Retainer and Chisel 30 1/4 lbs.

Size No.	Piston Stroke, Inches	Piston Diam., Inches	**Length Exclusive of Set or Center, Inches	Length Standard Piston, Inches	Weight (Without Set), Lbs.	Size of Hose Recommended, Inches	Rivet Set Shanks	Length Closed (Without Set), Inches	Length Open (Without Set), Inches	Distance Side to Center of Rivet Set, Inches
HOLDERS-ON										
†1	1 13/16	3 1/8	4 15/16	...	12 3/4	1/2	1.2165" diam. by 2 3/4" long	5 11/16	7 1/2	1 1/8
2	3	3 1/8	7 1/4	...	14 3/4	1/2		8	12	1 3/4
4	4 1/2	3 1/8	11 1/4	...	25	1/2		12	16 1/4	1 13/16
5	4 1/2	3 1/8	11 1/4	...	24	1/2		12	16 1/4	1 13/16
JAM RIVETERS										
00	2 1/2	1 3/4	8	2 1/2	25	1/2	Special 1.745" diam. by 1" long	For rivets up to 7/8" diameter		2 3/8
0	4	1 3/4	11 1/4	2 1/2	31	1/2	1.2165" diam. by 2 3/4" long	For rivets up to 1 1/8" diameter		2 3/8
7	5 3/8	1 1/16	12 5/8	3	30	1/2		Drive rivets to 3/4" diameter Buck any size		2 3/32

**Removable Center projects 3/4". †Offset Type.

LIGHTWEIGHT RIVETERS

Size	AV-1	AV-2 (Short-Stroke)	AV-3	AV-11	AV-12 (Long-Stroke)	AV-13
Weight—less rivet set						
With Pistol Grip Handle	4 lbs. 12 oz.	4 lbs. 15 oz.	5 lbs. 3 oz.	5 lbs. 4 oz.	5 lbs. 9 oz.	5 lbs. 13 oz.
With Offset Handle	2 lbs. 11 oz.	2 lbs. 14 oz.	2 lbs. 2 oz.	3 lbs. 3 oz.	3 lbs. 8 oz.	3 lbs. 12 oz.
With Button Throttle	2 lbs.	2 lbs. 3 oz.	2 lbs. 7 oz.	2 lbs. 8 oz.	2 lbs. 13 oz.	3 lbs. 1 oz.
Length Overall, bare, inches						
With Pistol Grip Handle	8	8 3/4	9 3/4	8 3/8	9 3/8	10 3/8
With Offset Handle	5	5 3/4	6 3/4	5 7/16	6 7/16	7 7/16
With Button Throttle	5 15/16	6 11/16	7 11/16	6 5/8	7 5/8	8 5/8
Piston Diameter; inches	5/8	5/8	5/8	9/16	9/16	9/16
Piston Stroke; inches	5/8	1	1 1/2	2 5/16	3	4
Capacity, Cold Rivets	1/8" Dural 5/32" Alum.	5/32" Dural 3/16" Alum.	3/16" Dural 1/4" Alum.	1/8" Soft Iron 1/8" Dural 1/8" Alum.	3/16" Soft Iron 3/16" Dural 3/16" Alum.	1/4" Soft Iron 1/4" Dural 1/4" Alum.
Size Hose Connection; pipe tap, inches	1/4	1/4	1/4	1/4	1/4	1/4
Size Hose Recommended; inches	5/16	5/16	5/16	5/16	5/16	5/16
Parker Taper Rivet Set Shank; inches	.401" dia. x 1 5/8" long	.401" dia. x 1 5/8" long	.401" dia. x 1 5/8" long	.401" dia. x 1 5/8" long	.401" dia. x 1 5/8" long	.401" dia. x 1 5/8" long
Shipping Weight, with Pistol Grip Handle Domestic, lbs.	7 3/4	8	8 1/4	8 1/4	8 1/2	8 3/4
Shipping Weight, with Pistol Grip Handle Export, lbs	10 3/4	11	11 1/4	11 1/4	11 1/2	11 3/4
Dimensions of Export Box, inches	18x8x5	18x8x5	18x8x5	18x8x5	18x8x5	18x8x5

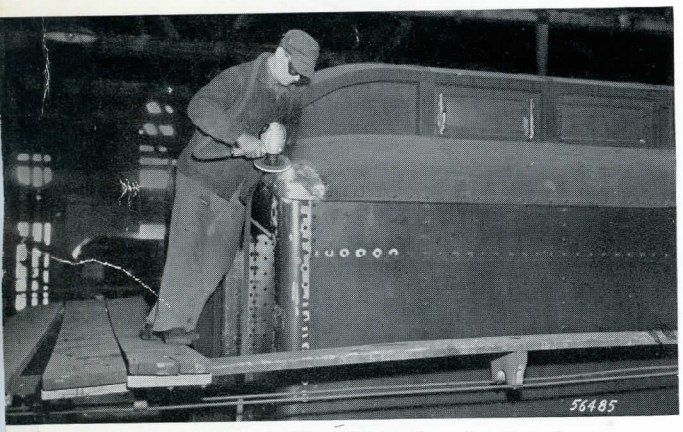
Pneumatic Grinders

Air Power—More

"Multi-Vane" Type

- Powerful but light in weight.
- Perfect balance insures smooth operation. There is no vibration to fatigue the operator.
- Sensitive governor makes it possible to operate grinding wheels at their most efficient speed and prevents overspeeding when running idle.
- One-piece rotor has deep vane slots. Vanes are wide and long wearing.
- Rotor bearings sealed against entrance of dirt and moisture.
- Cylinder is alloy iron; heat treated, ground and honed to glass-smooth surface.
- Four power vanes give smooth, constant flow of power; no pulsations.
- Automatic oiler lubricates entire rotor assembly, (except on size 00.)
- Wheel end bearing consists of matched pair of combination radial and thrust bearings.

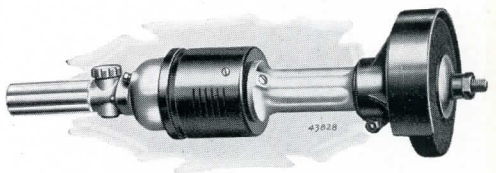
Above—Grinding pedestal leg face on locomotive frame with Size 26 Rod Grinder.



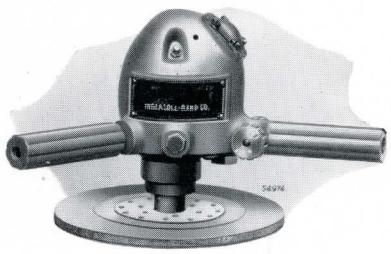
Above—A Size 3F "Multi-Vane" Grinder, equipped with a sanding head, dressing car roof patch weld.

Below—Resurfacing locomotive steel pedestal wedge with a Size 4F "Multi-Vane" Grinder.

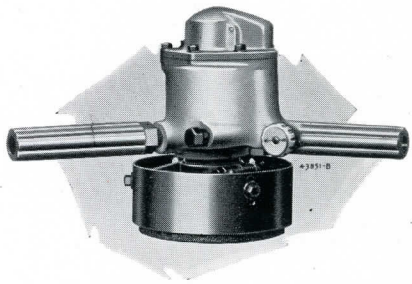
Size 00 "Multi-Vane" Grinder and accessories. A 1¼ lb. tool for touching up and finishing dies, for tool room bench work, etc.



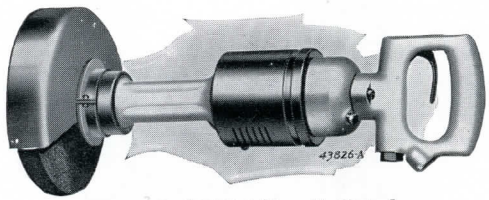
Size 3 "Multi-Vane" Grinder.



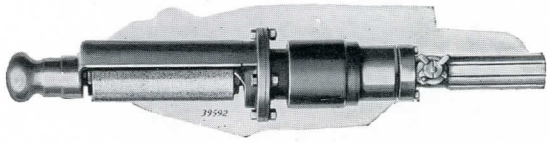
Size 3F Surface Grinder equipped with sanding head.



Size 4F Surface Grinder with Grinding Wheel.



Size 4G "Multi-Vane" Grinder.

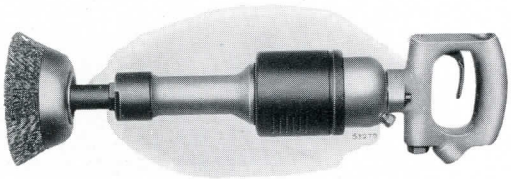


Size 26 Rod Grinder.

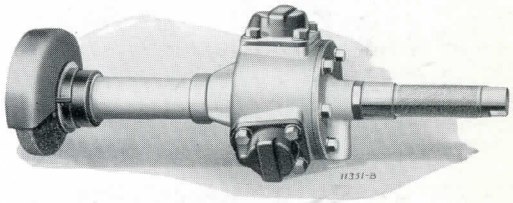
Power Per Pound

Polishing main rods with Size 4 "Multi-Vane" Grinder.

A Size 3F "Multi-Vane" Sander dressing heat swells on streamliner skirt shield after spot welding.



Size 3GW "Multi-Vane" Grinder with Cup-Type Wire Brush.



Size 602 Grinder.

Details of Ingersoll-Rand Grinders

Size	Average Free Speed R.P.M. at 90 lbs. Pressure	Weight with Guard, Lbs.	Length Overall, Inches	Diam. of Arbor for Wheels, Inches	Diam. of Wheel Used, Ins.		Width Wheel Used, Ins.		Hose, Inches	Distance from Side to Center of Arbor, Ins.
					Vitrified	Organic	Standard	Maximum		
3-CYLINDER, PISTON-TYPE GRINDERS										
601	4200	15	19¼	⅝	6	–	1	2	½	2⅝
*601	4200	14	19¼	⅝	Cup Type	Wire Brush	–	–	½	2⅝
602	4200	15	21⅜	⅝	6	–	1	2	½	2⅝
"MULTI-VANE" GRINDERS										
00	20000	†1¼	6⅜	Collet Type	1¼	1½	–	–	5/16	13/16
0	17000	†3½	13⅛	⅜	1¼	2	½	½	½	1¼
0G	17000	†3⅞	12½	⅜	1¼	2	½	½	½	1¼
**1	12000	†3⅞	14 1/16	⅜	2	2½	½	1	½	1¼
**1G	12000	†4¼	13 7/16	⅜	2	2½	½	1	½	1¼
2	6000	9¾	20¼	⅝	4	6	1	2	½	1 17/32
2G	6000	10¼	19	⅝	4	6	1	2	½	1 17/32
2E5	7200	9¾	20¼	⅝	–	5	1	2	½	1 17/32
2GE5	7200	10¼	19	⅝	–	5	1	2	½	1 17/32
3	6000	12	21 7/16	⅝	4	6	1	2	½	1 29/32
3G	6000	12½	20 13/16	⅝	4	6	1	2	½	1 29/32
*3W	4500	12¾	21 7/16	⅝	Cup Type	Wire Brush	–	–	½	1 29/32
*3GW	4500	13¼	20 13/16	⅝	Cup Type	Wire Brush	–	–	½	1 29/32
4	4500	16¼	22¼	⅝	5	8	1	2	½	2⅛
4G	4500	16¾	21	⅝	5	8	1	2	½	2⅛
4V4	6000	15½	22¼	⅝	4	6	1	2	½	2⅛
4GV4	6000	16	21	⅝	4	6	1	2	½	2⅛
4V6	4050	15½	22¼	⅝	6	–	1	2	½	2⅛
4GV6	4050	16	21	⅝	6	–	1	2	½	2⅛
4V8	3000	16¼	22¼	⅝	8	–	1	2	½	2⅛
4GV8	3000	16¾	21	⅝	8	–	1	2	½	2⅛

*With Cup Type Wire Brush.
**Can be furnished special with free speed of 6000 r.p.m. or 7200 r.p.m.

"MULTI-VANE" SURFACE GRINDERS AND SANDERS							
3F	6000	†9⅜	††8 9/16	7/8	Flared Cup Wheel; 5" dia. x 2" wide with ¾" thick hub	½	2⅛
4F	4500	†12½	††9 1/16	7/8	Flared Cup Wheel; 6" Diam. x 2" Wide with ¾" thick hub	½	2

4F Grinders can be furnished with speeds of 3000 R.P.M., 4050 R.P.M. or 6000 R.P.M. if specified. 3F Grinders can be furnished with speeds of 4500 or 5000 R.P.M.
†Weight without wheel guard. Wheel Guard not available for 00, 0, or 0G. ††Length without wheel.

"MULTI-VANE" ROD GRINDERS										
26	8500	x14¾	23½	¾	2½	–	6	6	½	1¾
29	8500	x17	26½	¾	2½	–	9	9	½	1¾

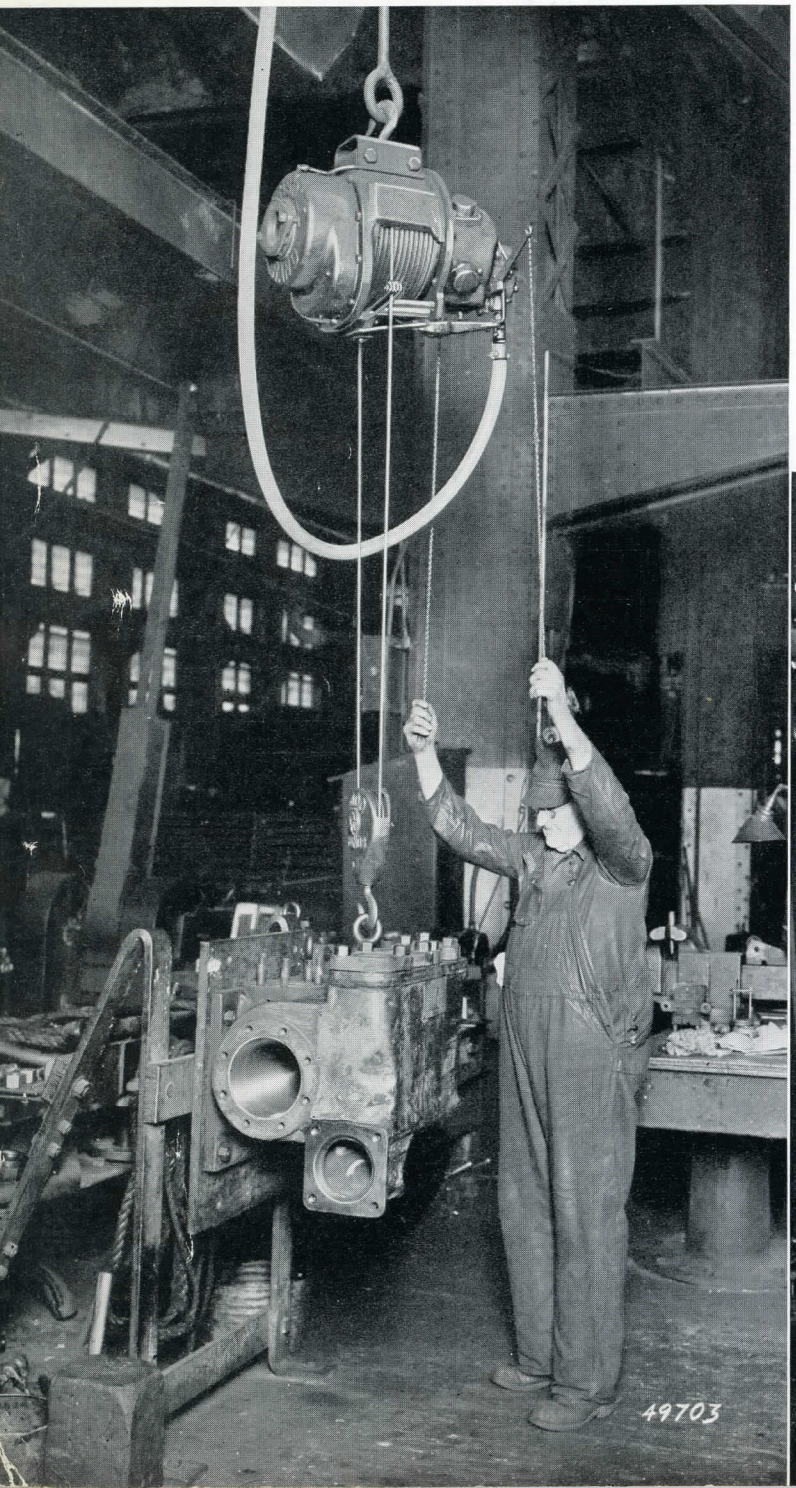
Ingersoll-Rand

Industrial
Air Motor
Hoists

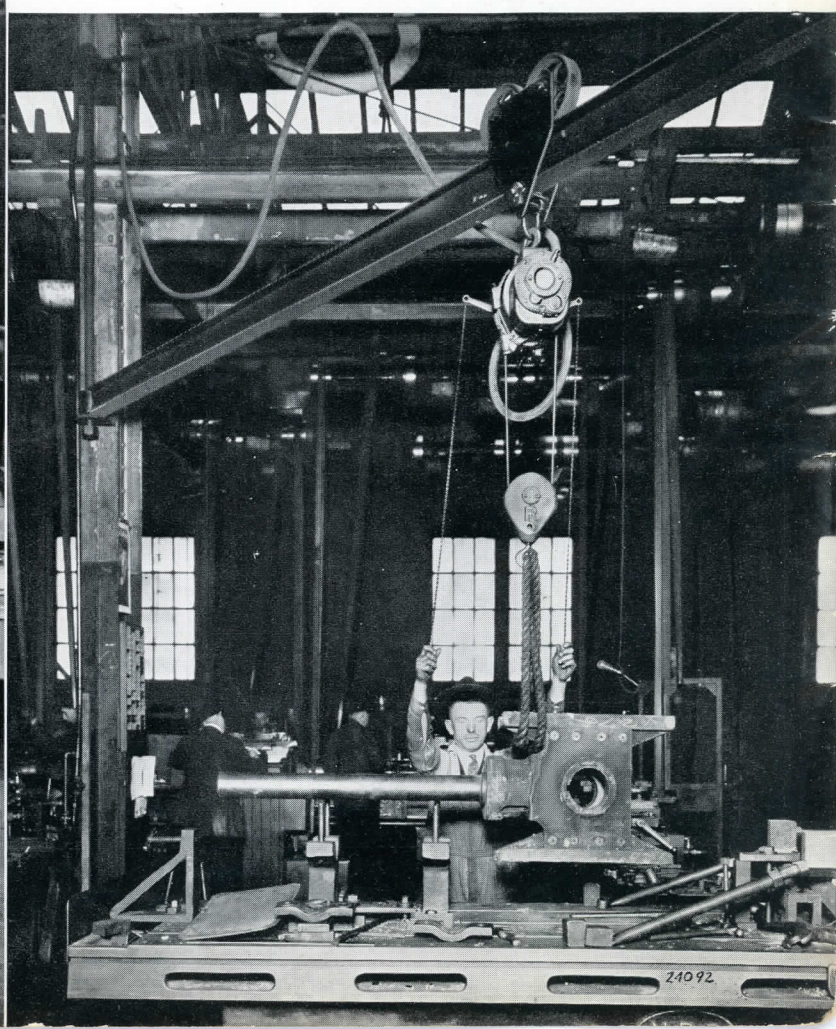
Automatic Up and

- Automatic brake that positively holds the load.
- Anti-friction bearing for top hook.
- Cylinders are renewable and interchangeable.
- Radial airplane type of motor giving compact construction.
- Graduated reversing valve gives instant and complete control of the hoist action.
- Poppet throttle valve positively prevents air leakage when idle.
- Oil and grease chambers from which all moving parts are automatically lubricated.
- Hook block—enclosed type; anti-friction bearing for hook.
- Automatic safety up-stop.
- Automatic safety down-stop.

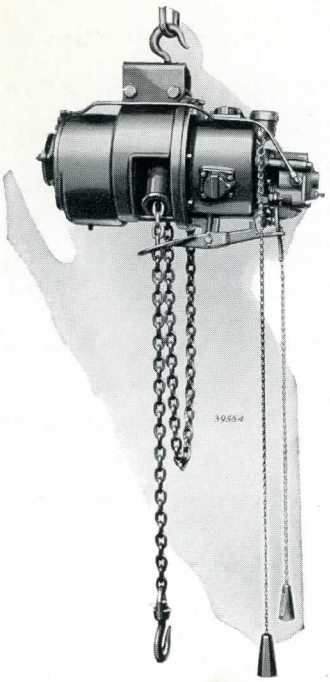
Handling a feed water pump with a Size C Industrial Air Motor Hoist.



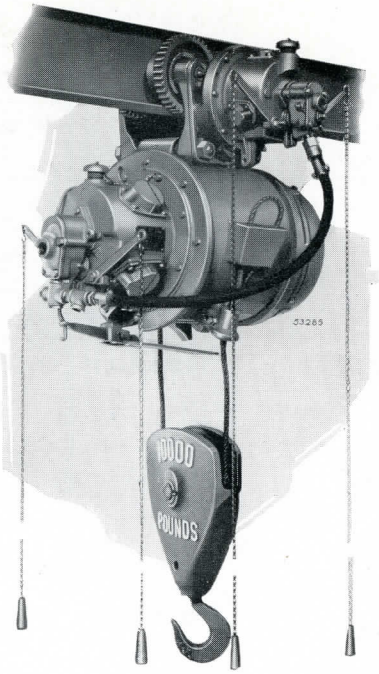
Below—Size B Industrial Air Motor Hoist serving a cross-head planer in a locomotive shop.



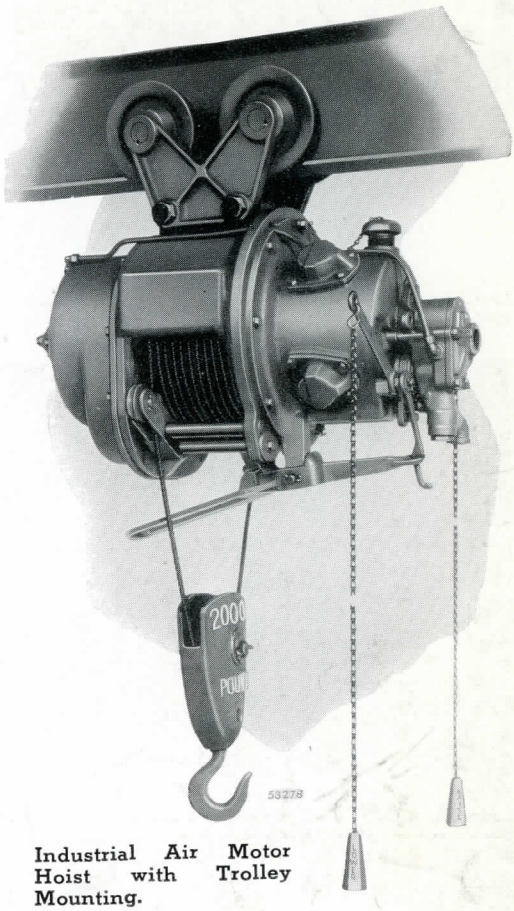
Down Stop . . . Low Cost Operation



Size AC or BC Industrial Air Motor Hoist with top hook. These hoists use a chain instead of a steel cable for handling the loads.



Industrial Air Motor Hoist with motor-driven trolley.



Industrial Air Motor Hoist with Trolley Mounting.

Details of Industrial Air Motor Hoists

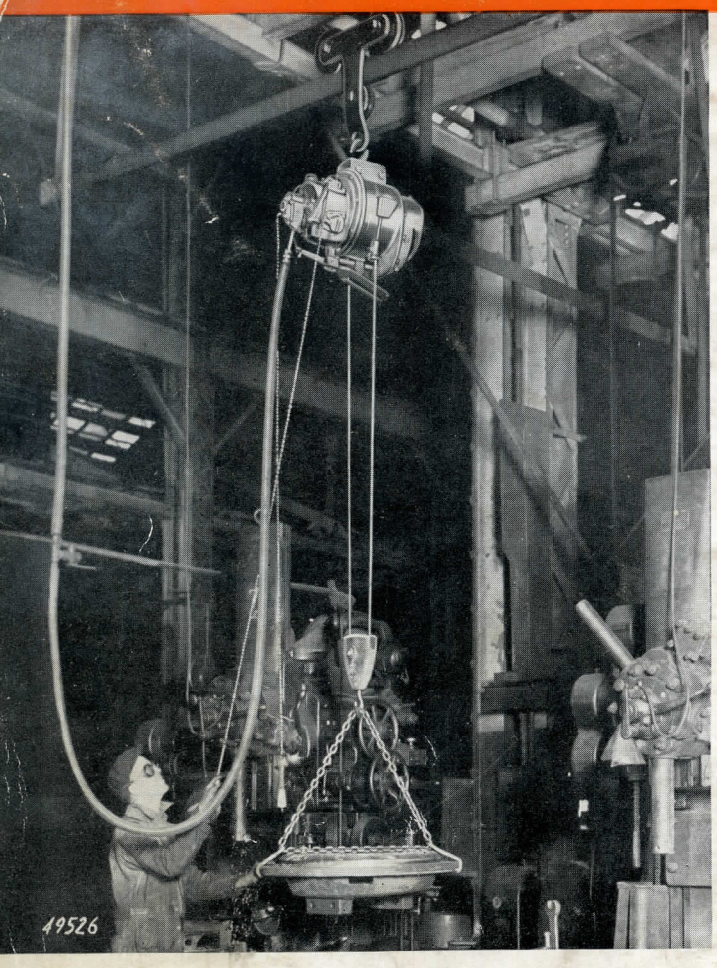
Size	Capacity, Lbs.	Max. Lift, Ft.	Feet Lift per Min., 80 lbs. Pressure	Size and Length of Wire Cable, in. x ft.	Weight Equipped with Top Hook, lbs.	Weight Equipped with Standard Trolley, lbs.	Weight Boxed Equipped with Top Hook, lbs.	Weight Boxed Equipped with Standard Trolley, lbs.	Cu. Ft. Boxed Equipped with Top Hook	Cu. Ft. Boxed Equipped with Trolley	Size of Pipe Connection, Inches	Size of Hose Recommended, Inches
A	500	15	53	¼ x 36½	220	235	270	285	4	4	½	¾
AC	500	*8	53	10′ of chain	140	160	185	205	4	4	½	¾
B	1000	15	25	¼ x 36½	220	235	270	285	4	4	½	¾
BC	1000	*8	25	10′ of chain	140	160	185	205	4	4	½	¾
C	2000	15	30	5/16 x 36	330	375	420	465	7.5	7.5	¾	¾
D	4000	15	17	⅜ x 36	450	495	555	600	9.9	9.9	¾	¾
D6	6000	14	12	7/16 x 35	460	505	570	615	9.9	9.9	¾	¾
E	10000	15	10	9/16 x 40	875	930	1000	1060	16.2	16.2	¾	1
G	20000	15½	5	9/16 x 81	1380	...	1570	....	24	....	¾	1

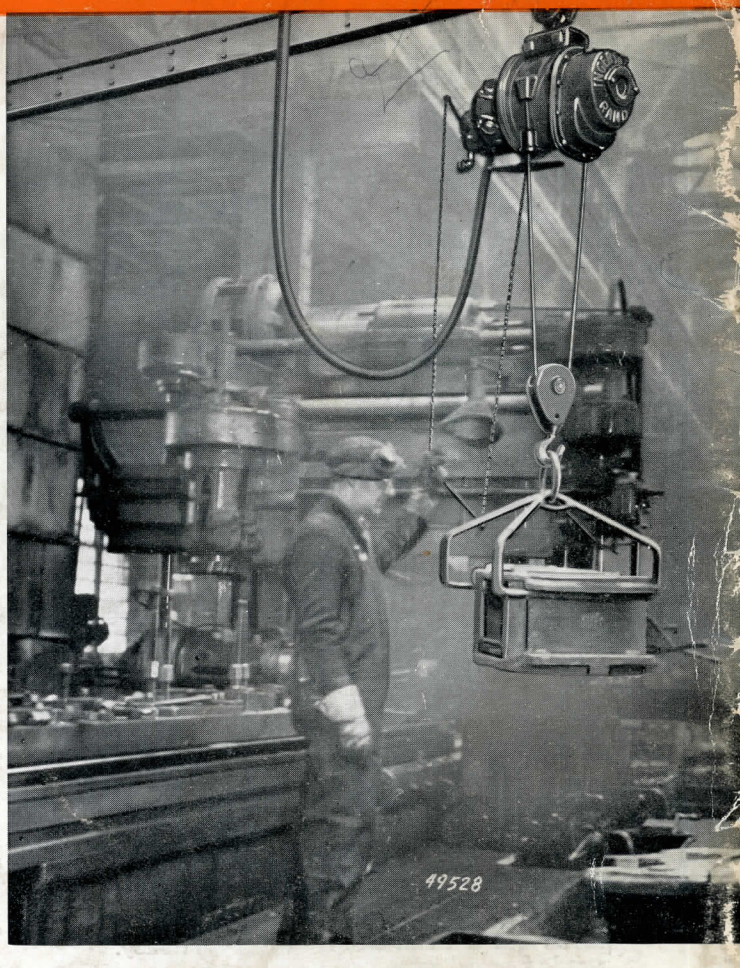
NOTE:—Special A, B, C, D, D6 and E Hoists can be furnished for longer lifts.

*The lift of AC and BC Hoists can be increased to any desired amount by merely increasing the length of the chain. The length of the chain furnished should equal the distance from the point of suspension of the hoist to the lowest point the Bottom Hook reaches.

Size	Weight Equipped with Hand Chain Trolley, Lbs.	Weight Equipped with Motor Driven Trolley, Lbs.	Weight Boxed Equipped with Hand Chain Trolley, Lbs.	Weight Boxed with Motor Driven Trolley, Lbs.	Cu. Ft. Boxed Equipped with Hand Chain Trolley	Cu. Ft. Boxed Equipped with Motor Driven Trolley
C	405	460	510	575	8.8	8.8
D	525	580	645	695	11.6	11.6
D6	535	590	665	710	11.6	11.6
E	970	1020	1100	1170	16.2	18.
G	1940	....	2210	....	47.	...

Industrial Hoists---Used Everywhere in the Shop





Industrial Air Motor Hoists in use in a machine shop of a large railroad.

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